Student Economic Review 2025

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Prize-Winning Essays of the Student Economic Review, 2025

Best Overall Essay: Dermot McAleese Medal:

Navigating Global Trade in an Era of Geo-Economic Fragmentation.

Prachi Agrawal

Best Applied Economics Essay: John O'Hagan Medal

Wage Responses to Tax Policy: Tax Indvidualisation in Ireland and its Impact on Married Women's Earnings

Patricia Finlay

Best Fresh Essay Prize:

Navigating Global Trade in an Era of Geo-Economic Fragmentation.

Prachi Agrawal

Editors and General Managers of the Student Economic Review, 1987-2025.

Year	Editor	General Manager
1987 (Vol. I)	John Fingleton	Paddy Waldron
1988 (Vol. II)	Kevin Carey	Finbar McDonnell
1989 (Vol. III)	Johnathan Wright	Joe Denehy
1990 (Vol. IV)	Philip Lane	C. J. O'Neill
1991 (Vol. V)	Paul O'Connell	Billy Stamp
1992 (Vol. VI)	Alan White	Addo C. Barrows III
1993 (Vol. VII)	Gareth Davis	David Butler
1994 (Vol. VIII)	Alan Dunne	Donagh Lynch
1995 (Vol. IX)	Fergal Shorthall	Myles H. Clarke
1996 (Vol. X)	Geoffrey Gill	Suzanne O'Neill
1997 (Vol. XI)	Sarah Rowell	Carol Newman
1998 (Vol. XII)	Richard Doyle	Charlotte Hess
1999 (Vol. XIII)	Michael McMahon	Niamh McDonagh
2000 (Vol. XIV)	Ana Carrie	Collette Murphy
2001 (Vol. XV)	Ronan Lyons	Charles Larkin
2002 (Vol. XVI)	Ivan McAdam	Janine Boyd O'Carroll
2003 (Vol. XVII)	Rowena Gray	Elaine Doyle
2004 (Vol. XVIII)	Denis Tkatchenko	Tara McInhoe
2005 (Vol. XIX)	Cormac O'Dea	Paul Sammon
2006 (Vol. XX)	Deirdre Reilly	Melinda Simonffy
2007 (Vol. XXI)	Niamh Crilly	Charlie Nolan
2008 (Vol. XXII)	Nathalie Ennis	Kieran Curtis
2009 (Vol. XIII)	Jean Acheson	James Walsh
2010 (Vol. XXIV)	Jason Somerville	Amandine Lobellett

Year	Editor	General Manager
2011 (Vol. XXV)	Robert Farhat	Áine Ní Shúilleabháin
2012 (Vol. XXVI)	Tony O'Connor	Debbie Blair
2013 (Vol. XXVII)	Brian Higgins	Marielle Grigsby-Rocca
2014 (Vol. XXVIII)	Féidhlim Mc Gowan	Cián Mc Leod
2015 (Vol. XXIX)	Gearóid Gibbs	Michael Mahony
2016 (Vol. XXX)	Gillian O'Connell	Kate Hayes
2017 (Vol. XXXI)	Míde Ní Ghríofa	Alexandru Radu Puiu
2018 (Vol. XXXII)	Keelan Beirne	Aditya Garg
2019 (Vol. XXXIII)	John (Charlie) Walsh	Luisa Mostarda
2020 (Vol. XXXIV)	Harry Humes	Kevin Loftus
2021 (Vol. XXXV)	Ronan Dunne	Yvonne O'Kiersey
2022 (Vol. XXXVI)	Sarah Clavin	Cian Brennan
2023 (Vol. XXXVII)	Rachel Kane	Constantine Iordanov
2024 (Vol. XXXVIII)	Saloni Khosla	Grace Kirwan
2025 (Vol. XXXIX)	Piotr Górecki	Aoife O'Connor

Guest Speakers at the Launch of the Student Economic Review, 1990-2025.

Year	Speaker	Organisation
1990 (Vol. IV)	Richard Lipsey	Simon Fraser University
1991 (Vol. V)	Charles Goodhart	London School of Economics
1992 (Vol. VI)	Peter Sinclair	Brasenose College, Oxford
1993 (Vol. VII)	David Greenway	Nottingham University
1994 (Vol. VIII)	Hamish Mc Rae	The Independent, London
1995 (Vol. IX)	John Sutton	London School of Economics
1996 (Vol. X)	John Martin	OECD
1997 (Vol. XI)	Alan Tait	IMF
1998 (Vol. XII)	David O'Sullivan	European Commission
1999 (Vol. XIII)	Paula Donovan	World Bank
2000 (Vol.XIV)	Dermot McCarthy	Department of an Taoiseach
2001 (Vol. XV)	Donal Donovan	IMF
2002 (Vol.XVI)	Margaret Doyle	The Economist
2003 (Vol. XVII)	Tom Healy	Irish Stock Exchange
2004 (Vol. XVIII)	Gerry Foley	ITV PLC.
2005 (Vol.XIX)	John Fingleton	Competition Authority
2006 (Vol. XX)	Marius Brülhart	HEC University of Lausanne
2007 (Vol.XXI)	Cliff Taylor	Sunday Business Post
2008 (Vol. XXII)	Alan Barrett	ESRI
2009 (Vol. XXIII)	Patricia Callan	Small Firms Association
2010 (Vol. XXIV)	Jane Williams	Forfás
2011 (Vol. XXV)	Tom O'Mahony	Department of Transport
2012 (Vol. XXVI)	Kyran McStay	Key Capital Limited
2013 (Vol. XXVII)	Alan Gray	Indecon Economic Group

Year	Speaker	Organisation
2014 (Vol. XXVIII)	Anke Heydenreich	Attestor Capital LLP
2015 (Vol. XXIX)	Declan Sheehan	JP Morgan
2016 (Vol. XXX)	Various Speakers	Past Committee Members
2017 (Vol. XXXI)	Kevin O'Rourke	All Souls College, Oxford
2018 (Vol. XXXII)	Liam Delaney	U.C.D.
2019 (Vol. XXXIII)	Carmel Crimmins	Reuters
2019 (Vol. XXXIII)	Seán Barrett	Dáil Éireann
2020 (Vol. XXXIV)	Eithne Fitzgerald	Former Minister of State
2021 (Vol. XXXV)	John Fitzgerald	ESRI
2021 (Vol. XXXV)	David McWilliams	Irish Economist
2022 (Vol. XXXVI)	Andrea Linehan	Currency Fair
2023 (Vol. XXXVII)	Ivan Pastine	U.C.D.
2023 (Vol. XXXVII)	Sarah Parlane	U.C.D.
2023 (Vol. XXXVII)	Edel Doherty	N.U.I.G.
2024 (Vol. XXXVIII)	Philip Lane	ECB
2024 (Vol. XXXVIII)	Felicia Odamtten	Black Economist Network
2024 (Vol. XXXVIII)	Margaret Doyle	Deloitte UK
2025 (Vol. XXXIX)	Frances Ruane	ESRI

Student Economic Review Debates, 1990-2024

Year	Opposition	Topic	Victor
1996	U.C.D.	Third Level Fees	Trinity
1998	U.C.D.	EMU Without Britain	Trinity
1999	Oxford	The Euro: The Way Forward	Oxford
2002	Oxford	Boston or Berlin?	Trinity
2003	Cambridge	The Euro is a Success	Cambridge
2004	U.C.D.	Free Trade and Development	U.C.D.
2005	Oxford	Third World Debt	Trinity
2006	Cambridge	Common Agricultural Policy	Trinity
2007	Oxford	Environmental Responsibility	Trinity
2007	Yale	Boston or Berlin?	Trinity
2008	Harvard	Mass Emigration and Labour	Trinity
2018	Cambridge	Britain's Place in Europe	Cambridge
2009	Yale	Boston or Berlin?	Yale
2009	Oxford	Bank Nationalisation	Trinity
2010	Cambridge	Should Ireland have Joined the Euro?	Trinity
2010	Harvard	The Decline of US Economic Dominance	Harvard
2011	Oxford	Ireland Owes a Debt of Gratitude to Britain	Oxford
2011	Yale	It's all America's Fault	Trinity
2012	Cambridge	Ireland Should Rejoin the Sterling	Trinity
2012	Harvard	The US State Does Not Care for it's Sick	Harvard
2013	Oxford	Deserting the Euro	Trinity
2013	Yale	Tax is Theft	Trinity
2014	Cambridge	United States of Europe?	Cambridge
2014	Harvard	US Education System	Trinity

Year	Opposition	Topic	Victor
2015	Oxford	100% Inheritance Tax	Trinity
2015	Yale	Opening the Mexican Border	Yale
2016	Cambridge	Will the EU Benefit from Brexit?	Cambridge
2016	Harvard	Should we be afraid of Cheap Oil?	Harvard
2017	Oxford	The EU is Unsustainable	Oxford
2017	Yale	Globalisation is Doomed	Yale
2018	Cambridge	Britiain Should Pay Reperation to Former Colonies	Cambridge
2018	Harvard	The American Dream is Dead	Trinity
2018	Oxford	Unite Ireland post-Brexit	Oxford
2019	Yale	Protectionsim is Failing America	Cambridge
2019	Cambridge	Open All Borders	Cambridge
2021	Oxford	Break-up the UK	Oxford
2021	Yale	Implement Universal Basic Income	Trinity
2022	Cambridge	Derelict Properties Should be Surrenderd	Cambridge
2022	Harvard	Economic Warfare Does More Harm than Good	Harvard
2023	Oxford	Tax Cuts Create Economic Growth	Oxford
2023	Yale	Break Up Big Tech	Trinity
2024	Oxford	Abolish All Borders	Oxford
2024	Harvard	Capitalism Cannot Solve the Climate Crisis	Trinity
2025	Cambridge	Tax Havens Hurt the Working Class	Cambridge
2025	Harvard	Decouple from the U.S. Economy	Harvard

Endorsements

"The Student Economic Review gives many students their first opportunity to publish a piece of academic written work. It thus supports and promotes the rigorous analysis, excellence in learning and persuasion that are essential building blocks for future careers and broader intellectual contribution. The collected contributions, now reaching into a third decade, constitute an elegant contribution to scholarship and erudition of which Trinity College can be proud."

John Fingleton
Trading London,
Editor, SER 1987.

"My involvement in the SER was an important defining point in my undergraduate experience at Trinity. It introduced me to the world of academia, the role and importance of academic publishing and the range of questions and depth of research possibilities in the discipline of economics. It has stood the test of time and grows stronger every year attracting the highest calibre of students."

Carol Newman
PhD TCD, Associate Professor TCD
General Manager, SER 1997.

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Cián McLeod
Strategic Operations Specialist, Google Ireland
General Manager, SER 2014.

Foreword

It is an honour to be invited to write this Foreword to the 39th Student Economic Review (SER). My involvement with the SER dates back to 1997 when as an undergraduate economics student I was chosen as General Manager of the 11th edition. I can safely say that it was one of the most formative undergraduate experiences that I had and it cemented my love of economics and academia. Since joining the Department of Economics at Trinity over 20 years ago, I have continued to be involved with the SER committee and place huge value on the opportunity it provides to interact with our undergraduate students. This year, I have the privilege of serving as a Patron of the SER alongside my colleagues, Professors Agustin Benetrix, Martina Kirchberger, and Barra Roantree. Our role primarily involved selecting this year's talented committee from a very competitive pool, as their efficiency and dedication meant there was very little else for us to do - an impressive testament to their abilities.

Like many former SER committee members, my own experience was shaped by the dedication and wisdom of Professor John O'Hagan, Professor Emeritus, Economics, President of the SER (1987-2016) and now Honorary Patron of the SER. His enduring commitment to the Review was instrumental in shaping its identity and making it the iconic publication that it has become, both within and beyond Trinity. In previous editions, he provides the history of the SER, one of the oldest undergraduate economics journals in the world, which was started in 1987. Each year a committee of Economics undergraduate students issues a call for essays to the undergraduate student body and selects the very best from a huge number of submissions for inclusion in the Review. The range of topics, the depth of the analysis, and the overall quality of the essays are always top-class. Prizes are awarded, including the John O'Hagan Medal for the best Applied Economics Essay, commemorating John's contribution and dedication to the SER over the years, the Dermot McAleese Medal for Best Overall Essay, and a prize for the Best Fresh Essay.

In addition to the production of the SER and the launch evening, an important annual event for the Department of Economics, the Committee organises two Debates annually, with Cambridge/Oxford and Harvard/Yale on alternating years. These SER Debates are held in the iconic GMB debating chambers and address difficult topics to packed audiences with distinguished panels of judges. The SER Workshops are also an ongoing feature, covering important topics for the undergraduate community including preparations for the Scholarship examinations, career-relevant talks, and often distinguished invited speakers.

The SER would not be possible without the generous support of its sponsors, many of whom are Trinity graduates who were significantly involved in the SER during their undergraduate years. Indeed, the long list of SER alumni reflects a distinguished group of individuals who have gone on to make a significant impact worldwide.

As the SER continues to inspire and challenge new generations of economists, it stands as a testament to the creativity, curiosity, and intellectual rigour that defines our undergraduate student community. I extend my sincere congratulations to this year's committee for their outstanding work in producing another exceptional volume of the SER. Their efforts not only enrich the intellectual environment of the Department but also contribute to the ongoing legacy of the SER as a beacon of undergraduate scholarship and engagement. I have no doubt that they, like the SER alumni before them, will continue to make remarkable contributions in all of their future activities.

Professor Carol Newman
Professor of Economics, Department of Economics, Trinity College Dublin

Student Economic Review Welcomes

WELCOME FROM THE GENERAL MANAGER.

It is with great pleasure that I welcome you to the 39th edition of the Student Economic Review, one of the oldest undergraduate academic journals in the world. Over its long history, the SER has grown beyond the journal itself, with the addition of the annual debates and workshops that enrich the experience of all those involved. The Student Economic Review provides an invaluable platform for Trinity students to contribute their perspectives on current economic discourse—whether through submitting an essay or participating in one of our debates.

I am deeply grateful to have been chosen as the General Manager for this year, a role I have thoroughly enjoyed, largely due to the incredible team I had the privilege of working with. Those of you who have experienced group projects will know how rare it is to find a team where everyone is not only passionate about the work they do but also committed to ensuring the success of the group. I was fortunate enough to be afforded such a team.

At the beginning of the year, the committee had the opportunity to sit down for lunch with the SER's patrons. It was an inspiring experience for the committee to hear about their individual work, and it was clear that they all share a deep passion for their respective fields – a passion that my fellow committee members and I hope to carry forward into our own future careers.

During Michaelmas term, the focus of our activities was on laying the groundwork for Hilary term and organising our upcoming events. In November, a 'Foundation Scholarship Workshop' was hosted, where past Economics scholars shared their experiences of preparing for the exams with students hopeful to be awarded the esteemed title of 'Scholar'. A special thanks goes to our Workshops Manager, Conor, for his commitment to making this event successful and for his continued work on the upcoming workshop in collaboration with the Central Bank of Ireland.

As we entered Hilary term, the editorial team was met with an influx of submissions for the review. Each submission was carefully read and discussed, and the team faced the challenging task of selecting those to be included in this 39th edition. The essays contained in this issue reflect the diverse range of interests among Economics students at Trinity, with topics ranging from navigating global trade in the modern era to estimating wage responses to tax policies. I hope you enjoy reading them as much as we did. For their continuous hard work, in what at times could be quite a laborious process, I would like to thank our Editor Piotr and the Deputy Editors Thea and Clodagh.

In February, we hosted the annual debates in collaboration with the University Philosophical Society and the College Historical Society, welcoming guest debaters from Cambridge and Harvard. These debates are always a highlight of the SER calendar, showcasing the high level of academic discourse between students from some of the world's most prestigious universities. This year's instalments upheld that reputation, with each team presenting insightful and thought-provoking arguments. The organisation of these debates is no small task, and I would like to acknowledge the tremendous efforts of our Debates Manager, Alison, whose meticulous coordination behind the scenes ensured the event's success.

At the start of the year, setting the date for the launch seemed like a distant event. Now, with the launch just weeks away, I would like to take this opportunity to thank James, our Launch Manager, who has worked tirelessly to ensure that the 39th Edition's launch will be a memorable evening for all our guests.

A special thanks to Shayna, our Finance Manager, who has expertly overseen the financial management of the publication, debates, and events throughout the year. Her consistent dedication has been invaluable and I am deeply grateful for her hard work and commitment.

During Michaelmas term, one of the key goals we set for the SER this year was to increase the journal's visibility among students. I'd like to thank Jack, our Communications Manager, for playing a pivotal role in this effort, enhancing the journal's presence on campus through the consistent promotion of the SER and its events on our social media platforms.

The journal you hold in your hands is the product of the dedicated efforts of our Production Manager, Josh, whose task of formatting and designing this issue unfortunately coincided with a wave of ongoing assignments. Thank you, Josh, for your hard work and dedication to the journal.

Finally, I would like to thank our Patrons—Dr. Barra Roantree, Dr. Agustín Bénétrix, Dr. Martina Kirchberger, and Dr. Carol Newman—as well as our Honorary Patron, Dr. John O'Hagan. Their continued support has been invaluable, and without it, none of this would be possible.
I sincerely hope you enjoy this 39th edition of the Student Economic Review. It reflects the hard work, dedication, and diverse perspectives of our talented contributors, and I trust that it will offer valuable insights and stimulate thought-provoking discussions!

Aoife O'Connor
General Manager
Student Economic Review XXXIX

Letter from the Editor

It is my pleasure to welcome you to the 39th edition of the Student Economic Review (SER). Since its founding in 1987, the journal has helped numerous ambitious and talented students make their first steps into the world of academia, policymaking, and business, and this year we have been committed to maintaining this legacy. By allowing the authors to explore economic topics of their interest, free from constraints imposed by college assignments, the Review fosters curiosity, creativity, and deep engagement with timely and important issues. Alongside the SER debates, which support economic discourse, and the workshops, which offer valuable insights and connections, our publication provides a unique environment for Economics students to begin their post-college careers.

For this edition, we received thirty essays on topics ranging from an evaluation of failed policy in India to outlooks for international trade in the new era. Due to the high quality throughout, selecting the works to be published was a Herculean task and we spent long hours in editorial meetings delving into the details of each paper. I would like to thank every student who submitted their work and particularly congratulate everyone whose piece was eventually chosen for publication. These successful essays are sorted into four categories, which are discussed below.

The first section is international economics. It is opened by Prachi Agrawal's essay examining approaches to international trade in a world increasingly divided into competing geo-political blocs. Its compelling argument for pursuing a pragmatic approach of systematic cooperation within trading blocs and liberalised global knowledge diffusion has earned it both the Best Fresher Essay and Best Overall Essay prizes. It is followed by Cormac Niland's analysis of the impact of economic sanctions on the Russian economy, which highlights the need for greater consideration of third-country trade evasion in their design. Finally, in his essay, Conal Gillespie posits the issues of low productivity growth and low labour mobility as key barriers to growth in the European Union.

The second section is concerned with labour economics. Tara O'Neill opens this category with an essay on the trade-off between justice and efficiency in the labour markets in the European Union, explored through a comparative analysis of Sweden and Norway. It is accompanied by Nour Samarah's piece on the relationship between automation-driven productivity gains and real wage growth, emphasising the impact that policy choices and institutions play in this matter.

The theme of the third section is economic policy. It is opened by Saloni Khosla's essay on the implications of raising the retirement age in Ireland, guiding the reader through the intricacies of various policies and advocating for a holistic approach. Next is Sonia Deshpande's piece on inflation expectations in the US and the EU, examining different theoretical approaches and policy proposals. To conclude this section, Hezamary Paul analyses the policy of demonetisation in India from game-theoretic, Keynesian, and Monetarist perspectives, highlighting the importance of public trust in successful policy-making.

The final section is applied economics. It begins with Patricia Finlay's essay, which utilizes a differences-in-differences approach to examine the impact of the Irish 2000 policy of partial tax individualisation on women's wages. The rigorous analysis and clarity it exhibits have earned it the John O'Hagan Award for the Best Applied Essay. It is followed by a behavioural economics experiment design co-authored by Patricia Finlay, Saloni Khosla, and Peng Nan Ang, which seeks to evaluate to what extent nudging can increase the turnout in the Student Union elections. Finally, Mark Heanue's essay uses a differences-in-differences method to test whether the Sexual Offences Act, introduced in the Republic of Ireland in 2017, impacted the rate of reporting.

The 39th edition of the Review would not be possible without my fellow editors, Theodora Clare and Clodagh Gaffney. I would like to thank them for the time and effort that went into selecting and editing the essays. I would also like to thank our Production Manager, Josh Craughwell, for bringing the journal to life. Additionally, I am grateful to Aoife O'Connor, our General Manager, who ensured that the editing process ran smoothly. Finally, I would like to express my gratitude to the entire committee for the mutual support throughout the year and for making this edition great in each of its elements. I have thoroughly enjoyed working with each of you.

Lastly, I would like to thank the Economics department and our patrons, Dr. Barra Roantree, Dr. Agustin Benetrix, Dr. Martina Kirchberger, and Dr. Carol Newman for their support and guidance. Prof. John O'Hagan, former President of the SER, has been an invaluable source of experience and advice.

I now invite you to turn the page and begin reading this year's Review. I hope you find reading these papers as enjoyable as I did.

Piotr Górecki
Editor
Student Economic Review XXXIX

SER Debates

2024-25

Since their inception in 1996, the SER Debates have stood as a central pillar of the SER, serving as a dynamic and engaging platform for economic discourse within Trinity College. What began as a singular debate has since expanded into an annual tradition, attracting world-class debaters from Oxford, Cambridge, Harvard and Yale to engage with Trinity peers on some of the most pressing economic issues of our time. The debates provide an invaluable opportunity to explore complex economic theories in a way that is both accessible and entertaining to students across all disciplines.

This year, we aimed to tackle critical topics relevant to Ireland's position in the global economy. The impact of tax havens on the working class and the evolving economic relationship between Ireland and the United States stand as pivotal issues both here and globally, leading to two broad and compelling clashes.

This Debate series would not have been possible without the help and expertise contributed by the Hist, especially their Correspondent Secretary Adam Rainbolt, Treasurer Ella O'Neill, and Auditor Tom Francis, as well as that of the Phil, in particular their President Annika Ramani and Secretary Liam Corcoran, all of whom contributed a substantial amount. Furthermore, I would like to thank the SER's Patrons as well as the Chair Rowena Dwyer and a panel of Judges, Dr. Barry Colfer, and Dr. Ron Davies, for chairing and judging the Cambridge vs. Trinity Debate. Finally, I thank Chair Kingsley Aikins, Dr. Roland Erne, and Dr. Paul Scanlon for judging the Harvard vs. Trinity Debate. Rowena Dwyer and Paul Scanlon each contributed to the Millenium Edition SER, and so we thank them for returning to share their expertise to the current class, bridging generations of economic thought and demonstrating the enduring impact of the Review in shaping future leaders in the field.

Cambridge Debate - February 19th, 2025

This House Believes Tax Havens Hurt The Working Class

The first Student Economic Review debate of the year took place on the 19th of February in collaboration with the Trinity College Dublin Historical Society (The Hist). Facing off against a strong team from Cambridge University, the debate explored the motion This House Believes Tax Havens Hurt the Working Class. This topic was chosen due to its increasing relevance in economic discourse, particularly as tax justice and multinational corporate taxation take centre stage in global policy discussions. As economies worldwide grapple with wealth inequality and the role of financial havens in capital allocation, the debate provided a crucial opportunity to interrogate both the economic and moral dimensions of these structures.

The proposition was represented by Trinity's team: Prachi Agrawal (PPES), Andy Cullinan (PPES), and Ben Kieron Glennon (Law and Politics). The opposition, hailing from Cambridge, consisted of Leonas Pouch (History and Politics), Chris Lorde (HSPS), and Olivia Arbour (HSPS). Our judging panel included Rowena Dwyer, Head of the Irish Government Economic and Evaluation Service (IGEES), who graciously chaired the debate, alongside Dr. Barry Colfer, Director of Research for the Institute of International and European Affairs, and Dr. Ron Davies, Professor of Economics, UCD.

Trinity, as the proposition, advanced the argument that tax havens fundamentally harm the working class by depriving governments of essential tax revenue, reducing the funds available for public services, and exacerbating wealth inequality. The team focused on the failure of trickle-down economics, arguing that rather than reinvesting profits into job creation or wage increases, multinational corporations use tax havens to concentrate wealth among shareholders. They drew comparisons between tax havens and colonial economic structures, where tax exemptions serve the elite at the expense of broader societal welfare. The team also highlighted the role of corporate lobbying in preserving the status quo, arguing that tax havens allow wealthy individuals and multinational corporations to unduly influence policymaking. A particularly forceful argument was made regarding the inflationary pressures created by tax avoidance, where real wage gains for the working class are ultimately eroded by rising living costs. Additionally, they challenged the notion that tax havens create real jobs, contending that such jurisdictions predominantly attract shell corporations and elite financial services rather than substantive employment opportunities for the working class.

Cambridge, opposing the motion, presented a strong counter-narrative, arguing that tax havens contribute to economic efficiency and investment by allowing capital to flow freely. They pointed to Ireland itself as an example of a nation that has benefited from competitive corporate tax rates, arguing that jurisdictions with attractive tax policies facilitate prosperity by attracting foreign direct investment. The team further challenged the proposition's economic assertions by referencing the French billionaire tax, which led to significant capital flight and an estimated €2.8 billion loss in tax revenue. This, they argued, illustrated the dangers of over-taxation and the necessity of financial jurisdictions that provide alternatives. Cambridge also highlighted recent global tax reforms, particularly the OECD's global minimum tax agreement, suggesting that tax havens are already being reined in by international cooperation, making outright abolition unnecessary. Perhaps the most striking critique from Cambridge was their contention that many of the proposition's grievances, such as lobbying and economic inequality, were not uniquely attributable to tax havens, but rather symptomatic of broader capitalist structures. They also questioned the consistency of the proposition's arguments regarding inflation, pointing out ambiguities in whether tax havens were contributing to rising or falling prices. The opposition ultimately framed tax havens as a necessary, if imperfect, tool for small economies to attract investment and secure their place in global financial markets.

Following a lively and intense exchange of economic ideas, the chair of the judging panel, Rowena Dwyer, took to the floor to commend the speakers and give her own insight. She posed the question: Why do we have taxation systems? What are their purposes? And more importantly, what are their implications? Through her experience in public policy she reminded us all that there is rarely an obvious answer to such complex questions, but that we must not forget Adam Smith's cannons of taxation – among others, the tax system should be simple.

The judging panel then retired to deliberate on the competing analyses and arguments. After a closely fought debate, the result was announced in favour of Cambridge's opposition, citing the strength of their argument that many of the issues posed are merely symptoms of wider issues and not unique to tax havens. For this argument, and his impressive rhetoric, Chris Lorde of Cambridge was awarded Best Speaker for his clear and incisive deconstruction of the proposition's case. The judges commended both teams for their depth of research and engagement with economic theory, marking a compelling start to this year's SER debates.

Harvard Debate – February 27th, 2025

This House Would Decouple From The US Economy

A week later the side from Harvard arrived to face off against Trinity for the second SER debate of the year. This highly anticipated debate was held in collaboration with the DU Philosophical Society (The Phil) and brought together formidable debaters from the US to explore the growing uncertainty surrounding Ireland's economic relationship with the United States. Even since confirming the debate motion in late 2024, we have seen rapidly increasing volatility in American economic policy confirming the need to discuss, and further understand this changing relationship. Given the instability in US fiscal and trade policy, as well as the broader geopolitical shifts shaping global markets, this debate provided a crucial opportunity to examine whether Ireland should reconsider its economic partnerships.

Representing the Trinity team were Oisín Ward (Economics), Henrietta Vanni (Dentistry), and SER debate veteran Jack Palmer (PPES). While the opposition side, hailing from Harvard, consisted of Max Fan (English and Mathematics), Catherine Liu (Economics), and Daniel Sheremeta (Mathematics and Computer Science). Our judging panel included Kingsley Aikins, CEO of The Networking Institute, who graciously chaired the debate, alongside Dr. Roland Erne, Professor of European Integration & Employment Relations, UCD, and finally Dr. Paul Scanlon, Professor of Economics, Trinity.

Trinity, as the proposition, argued that continued economic reliance on the US posed significant risks to Ireland's long-term stability. The team highlighted the volatility of American economic policy, pointing to the disruptive nature of recent trade wars, political instability, and the growing trend of economic nationalism. They contended that Ireland, despite its historical ties to the US, would be better served by diversifying its trade and investment partners, reducing exposure to external shocks emanating from Washington. The team made a compelling case that the US economy, while still dominant, was entering a period of increased unpredictability, with fiscal policies that often prioritised domestic interests over global partnerships. The solution posed by Trinity argued that Ireland's strong position within the European Union provided an opportunity to pivot towards a more self-sustained economic model, prioritising diversification of trade, investment, and other geopolitical relations to become less reliant on US foreign direct investment and corporate tax policies that had increasingly come under international scrutiny.

Harvard, in opposition, countered with a powerful argument that decoupling from the US economy would be economically reckless and geopolitically unwise. The team emphasised the deep integration of Ireland's economy with that of the US, noting the sheer scale of American investment in Irish industries, particularly in technology, pharmaceuticals, and finance. They argued that any attempt to sever ties would not only jeopardise Ireland's economic growth but would also weaken its ability to attract global investment. Harvard stressed that despite periodic turbulence in American economic policy, the US remained an indispensable economic ally, with longstanding trade agreements, a shared corporate ecosystem, and a historically strong diplomatic relationship. The opposition also highlighted the broader geopolitical risks, warning that distancing Ireland from the US could limit its strategic influence on international trade policies and potentially isolate it from crucial economic opportunities.

The debate was marked by sharp exchanges, with Trinity pushing the argument that economic autonomy would grant Ireland greater resilience against external economic downturns. Harvard dismissed this as an impractical and overly ambitious approach, given the extent of existing economic entanglements. The proposition's case rested on the premise that Ireland could gradually recalibrate its economic priorities without outright severing ties, whereas the opposition maintained that even partial disengagement would come at a significant cost.

Kingsley Aikins, as Chair, concluded the evening with a speech reflecting on the deep historical and economic ties between Ireland and the United States. He spoke of the vast Irish diaspora both in the US and across the world, highlighting how generations of emigrants have created a vast empire without needing any military might. Drawing on his role as CEO of the Networking Institute he recounted how Ireland successfully utilised this vast network to attract foreign investment and leveraged its skilled workforce and international reputation to build itself to what we see today. Turning to the framing of this debate in the context of current global uncertainty Aikins remarked upon the quote from Lenin, reminding us we are experiencing a period of "weeks where decades happen", suggesting that Ireland must navigate these changes carefully. Finally commending the strength of both teams in their arguments, before retiring with the judging team to begin the impossible task of declaring a victor.

Following a difficult discussion, with an extended deliberation period, ultimately the Harvard team was declared victorious for their effective dismantling of the feasibility of decoupling, as well as their ability to provide historical precedent and pragmatic policy alternatives which ultimately persuaded the judges. Despite this, the John O'Hagan Medal for Best Speaker was awarded to Henrietta Vanni of the Trinity team, for her convincing line of argument that US protectionism is an inevitable trend rather than a temporary shift, and so Ireland must adopt a proactive strategy rather than merely reacting to economic changes as they unfold. The judging panel again commended all the speakers, as well as the audience for the enlightening discussion and keen engagement in such pivotal issues of economic discourse, marking a fitting conclusion to the 2025 SER Debate Series.

Alison Good
Debates Manager
Student Economic Review XXXIX

SER Workshops

2024-25

Each year, the Student Economic Review organizes workshops to provide students with opportunities to explore economic topics beyond their coursework, engage with professionals, and develop key insights into the world of economics and policy. This year, SER hosts three workshops, each covering essential aspects of academic achievement, gender diversity, and central banking.

SER Foundation Scholarship Workshop

November 4th, 2024

The academic year began with the annual Foundation Scholarship Workshop, a key event aimed at supporting students preparing for Trinity College Dublin's Foundation Scholarship examinations. The workshop, held in the Arts Block, featured senior Foundation Scholars who shared their experiences, study strategies, and key insights into the scholarship exams.

Attendees benefited from a structured discussion on exam techniques, time management, and subject selection, followed by an engaging Q&A session where scholars provided tailored advice based on their own journeys. The workshop continues to be an essential part of SER's academic support initiatives, equipping students with the knowledge and confidence needed to excel in one of Trinity's most challenging academic pursuits.

Irish Society of Women in Economics

As of writing, we are currently planning the Women in Economics Panel Workshop this year, in conjunction with the Irish Society of Women in Economics. This event will bring together distinguished female economists, academics, and professionals to discuss the challenges and opportunities for women in the field.

The panel will cover a range of important topics, including gender disparities in economics, career progression, mentorship, and the impact of diversity on economic policymaking. The event will also provide students with a networking opportunity, allowing them to connect with professionals and peers advocating for gender balance in the profession.

Central Bank Workshop

A key highlight of this year's workshops is the Central Bank Workshop, featuring Tara McIndoe Calder. This event, scheduled for late March, will provide students with an in-depth look at the role of central banks and the career opportunities available for graduates.

The workshop will focus on what the Central Bank does, how it manages economic stability, and the types of roles available for recent graduates. Tara McIndoe Calder has also arranged for a current Central Bank graduate employee to join the discussion, offering students firsthand insights into day-to-day responsibilities, career progression, and opportunities in financial regulation and monetary policy. This session will be particularly valuable for students considering careers in financial policy, central banking, and economic regulation, bridging the gap between academic study and professional practice.

The 2024-25 SER Workshops have once again provided students with meaningful learning opportunities across academic, professional, and policy-oriented topics. From preparing students for one of Trinity's most rigorous scholarship exams to fostering inclusivity in economics and deepening understanding of central banking, each workshop has contributed to expanding students' perspectives on economic issues.

These workshops would not have been possible without the contributions of our guest speakers, panellists, and SER committee members, whose expertise and dedication ensured the success of each event. As the Student Economic Review continues to grow, we look forward to delivering even more insightful workshops in the coming year.

Conor O'Kane
Workshops Manager
Student Economic Review XXXIX

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International Economics.

Navigating Global Trade in an Era of Geo-Economic Fragmentation.

Prachi Agrawal

Junior Freshman

"Exorbitant tariff threats, economic decoupling and the decline of global cooperation are radically changing and shaping international trading patterns in the 21st century. This paper identifies the link between these increasing occurrences and the larger phenomenon of geo-economic fragmentation. Through contextualising the current economic system as one underpinned by neo-colonialism and one that breeds unsustainable levels of competition, this paper undertakes a comprehensive analysis of the potential implications of fragmentation in today's structurally flawed global market. In particular, it sheds light on the risk of inefficiency and sizable threats to emerging economies arising from supply chain reconfiguration and technological decoupling. The paper concludes with a case for systematised decoupling as a feasible policy action aimed at mitigating the prospective costs of fragmentation in the future while ensuring efficiency, competitiveness and the economic development of EMDEs. It digresses from conventional literature by identifying the fundamental flaws of the current economic world system and proposes pragmatic and innovative solutions in hopes of alleviating future economic malaise."

Introduction

The Silk Road of the 2nd BCE stands as the first evidence of a cross-regional economy in human civilisation. The network sprawled across Eurasia for over a millennium, becoming a key driver in economic prosperity by enabling the trading of lucrative commodities between urban centres (Blades and Paik, 2020). The Mongol Empire fostered 'an environment that facilitated land transit with less risk and lower protective rent' and countries began digressing from mercantilism to relying on neighbours for certain commodities (Abu-Lughod, 1989., DeLong and Shleifer, 1993). Interdependence and cooperation were cultivated through this overland trade. The 11th century then saw the introduction of taxes, tariffs and restrictions on trade (Lyon, 1984). Trade became more volatile due to protectionist policies, political fragmentation and unprecedented shocks caused by the Black Death (Millward, 2007). The Silk Route saw its eventual demise in the 15th century, after the Ottoman Empire closed off trade routes with the West, deterring trade and causing widespread economic destabilisation across the route.

Aspects of the Silk Route remain strikingly synonymous with the status quo - and its downfall may prognosticate ours. 19th century 'First Globalisation' saw a similar exponential connection between global economies through rapid technological advancements and policies that facilitated bilateral trade. The significant influence of Western neoliberalism continued shaping the emerging world system, introducing Free Trade Agreements and adopting the Ricardian trade theory of producing in areas of comparative advantage (Bedirhanoglu, 2008). As countries enjoyed gains from trade and economic growth, modern globalisation became rooted in the new economic world order. However, the 21st century has seen a resurgence in protectionism and political fragmentation. The US-China trade war, Brexit and continual bottlenecks point towards a new age of international trade; and perhaps a future similar to that of the Silk Route. This paper investigates the nature of the changing patterns of the global economy, and the long-term implications of this fragmentation and endeavours to find solutions that can subvert the risk of further losses caused by decoupling.

Hyper-globalising or de-globalising?

Current economic forecasts present a conflicting view on global trade in the 21st century. The UNCTAD Global Trade Report predicted global trade to hit an all-time high of $33 trillion in 2024. Further, the OECD found a 3.2% increase in global GDP and expects the world merchandise trade volume to increase by 3.3% in 2025. Simultaneously, however, many claim that we have entered an age of 'de-globalisation'. The share of the goods trade as a percentage of the global GDP has plateaued and even declined over the past decade (World Bank, 2023).

Figure 1: Source: "Merchandise Trade (% of GDP)," World Development Indicators, World Bank, updated May 10, 2023

To accurately analyse the state of the global market, it is first important to disprove the claim that the world is undergoing an upheaval of globalisation. The use of value-added production data instead of gross trade data shows that more intermediate goods are being domestically produced as a result of changing consumer preferences, and technological improvements have optimised labour-intensive sectors (Erb and Sommers, 2024). On a larger scale, the current economic system is firmly entrenched in international trade; global economies are acutely aware of the economic calamity associated with repudiating globalisation. Every major world region currently imports about 25% or more of at least one important commodity required for economic activity. Further, 110 million people in the global workforce serve European and North American demand (McKinsey Global Institute, 2024). This long-standing system of dependency sufficiently disregards the argument that the world is 'de-globalising'.

A more fitting analysis of the change in globalisation trends could be explained through geo-economic fragmentation (GEF), defined as a 'policy-driven reversal of global economic integration often guided by strategic considerations' (Aiyar et al., 2023:4). Reasons for this economic trend are manifold. Geopolitical tensions heightened by rivalries, unprecedented global events causing supply chain disruptions and concerns of 'national security' have caused global economies to become wary of multilateral global trade, and instead adopt de-risking measures to protect themselves from proliferating economic shocks (Colantone and Staning, 2018). The year 2023 saw the imposition of approximately 3000 trade restrictions - three times higher than in 2019 (Kose and Mulabdic, 2024). The offshoring of production to countries in geographical proximity, known as 'near-shoring', has increased by approximately 8% according to the Trade in Transition 2023 Global Report (IMF, 2023). Further fragmentation is seen through nations relocating their foreign direct investment to geopolitical allies, known as 'friend-shoring', while also becoming increasingly frugal with overall FDI investments due to geopolitical risks. This has resulted in a drop in global FDI from 3.3% in the 2000s to 1.3% in 2023 (IMF, 2023). The global economy may not be 'de-globalising', but it is clear that there has been a paradigm shift in international trading patterns over the past decade.

Economic implications of continued GEF in the global economy

Although still in its infancy, GEF's spillovers are starting to become visible in society. Stagnating manufacturing productivity, unstable job displacement and an underwhelming global outlook for 2025 can be closely tied to the growing trend of fragmentation (Gaál et al, 2023., World Economic Forum, 2025). Given the rampant spread of economic nationalism and 'country-first' economic policy, we can assume that GEF will continue in the short-term future. This section aims to discern the potential implications of continued fragmentation on the global economy.

The cost of supply chain configuration

Firstly, GEF has caused a substantial reconfiguration in global supply chains. Regionalisation and 'friend-shoring' have brought strategic government intervention, reinvestment in domestic sectors and shorter and more complex supply chains to the forefront of the policy process (Kalvelage and Tups, 2024). The priority shift from efficiency to allyship has several possible implications. Classical Smithian and Ricardian trade theories exalt the merits of cost-effective resource allocation and specialisation in trade, and the Heckscher-Ohlin model further outlines how trade should occur between countries with distinct factor endowments and technological capacities to maximise gains from trade (Costinot, 2009., Gandolfo, 1986). Digression from these traditional trade models indicates that global supply chain efficiency and economic prosperity will likely decrease as a result of fragmentation.

Furthermore, aggressive protectionist policies imposed by economic superpowers such as the US and China are being met with retaliatory tariffs, accelerating the potential decoupling of global trading blocs. Although the exact nature of bloc fragmentation is still ambiguous, it is likely that nonaligned countries will be forced to pick sides and trade exclusively from the bloc they politically align with best (Cerdeiro, 2020., Bolherius et al., 2021). In the event that most 'middle countries' engage in economic decoupling, they would forgo significant exposure and revenue to rival markets in exchange for economic stability. The reduction in cross-border capital flows can generate an output loss of $7.4 trillion (IMF Blog, 2023). Aiyar and Ilyana (2023) argue that 'it takes time and effort to reconfigure supply chains' due to high short-run elasticities of substitution. It is important to note that the actual cost of fragmentation is likely to be much higher when the foregone revenue from this reconfiguration, as well as decreased migration, FDI flows, intermediate good trading and economies of scale are quantified.

Inefficiency sets in as technological decoupling decelerates global knowledge diffusion, hindering the ability of rival blocs to increase productivity in their domestic sectors (Lind and Ramondo, 2023). The trade-off of economic security versus proficient production practices can lead to a more careless depletion of scarce resources, as countries may utilise harmful extractive techniques to source commodities to reduce dependency on their geopolitical rivals. This is seen markedly in the 'Chip War' between the US and China. Despite the economic superpowers having a strategic interest in acquiring efficient semiconductors for significant cost-cutting purposes, acquiring these commodities before their rival has taken precedence in their policy objectives. Not only have the US and China invested $53 billion and $37 billion respectively to bring semiconductor value chains and research back to their domestic economies, but both are heavily involved in using any means necessary to 'win' the chip race (US Department of Commerce, 2024., Kindig, 2024). China's monopolisation of Africa's copper belt and the US tightly regulating the exportation of critical technology such as lithography equipment is causing global collateral damage by harming the planet. Not only that, it is delaying the production of a key component of the green transition while counterintuitively hurting their own economies through the large amounts of investment wasted on 'beggar-thy-neighbour' policies (Egyin, 2024).

GEF and the developing world

Secondly, extensive academic literature finds that GEF disproportionately disadvantages emerging and developing economies (Aiyar et al., 2023). Wallerstein's (2004) World Systems Theory explains how rapid Western industrialisation resulted in an imperialist system of unequal growth and structurally inequitable terms of trade. The pervasion of the Rostovian take-off model allowed Western economies to swiftly develop while emerging markets and developing economies (EMDEs) struggled to recuperate from colonialism and exploitation (Angeles, 2007). The Prebisch-Singer thesis further elucidates how the relative inelasticity of demand for primary commodities compared to manufactured goods means that EMDEs (which mainly specialise in primary production) lose revenue in the long run (Toye, 2003). Under the status quo, EMDEs are resigned to participate in a highly competitive market amid sustained stagnancy, internal political destabilisation and systemic inequality through Western hegemony, as this is the only viable way to ameliorate their economic condition.

GEF poses a substantial threat to EMDEs' already-Herculean fight for economic development. Algieri (2022) finds that the global gains from trade are unevenly distributed between developed and developing economies. Hence we can assume that the declining productivity gains resulting from fragmentation will disproportionately impact EMDEs relative to wealthier nations. As economies engage in 'friend-shoring' and economic decoupling, EMDEs are likely to be further isolated due to their lack of integration into the world economy. A reduction in the global demand for primary commodities due to the localisation of supply chains can cause widespread deflation and unsustainable amounts of economic depression within these emerging markets (Tilton, 2013). Given the fiscal precarity of EMDEs after three waves of broad-based debt accumulation, a recessionary shock of this size may very well be the coup de grâce to the possibility of economic development for the Global South in the foreseeable future (Kose et al, 2020).

Lastly, as GEF continues to strain geopolitical relations, multilateralism is in danger of becoming an idealistic tchotchke of the past - hindering the delivery of urgently needed global public goods such as climate action and social justice. In the long run, the failure to arrive at tangible climate solutions will harm countries most susceptible to climate catastrophes; developing economies across equatorial regions (Georgieva et al, 2022). There is a bitter irony in the fact that after two centuries of the West proselytising the necessity of trade liberalisation and enjoying exorbitant gains from trade, they are retreating from the very same system as it collapses around them; leaving those emerging nations that were subjugated to enter the free global market to deal with the catastrophic repercussions of the failure of neoliberal trade.

Policy proposals and critiques: A case for systematised decoupling

While there is an abundance of literature that thoroughly analyses the problems facing economic decoupling, viable remedies are seldom provided. This section aims to critique and propose solutions aimed at circumventing the potentially disastrous implications of continued fragmentation. It is clear that the correct answer cannot be an absolutist defence of free trade; it is an ineluctable fact that geo-political trends will continue to reshape global supply chains. Therefore, we must endeavour to find solutions congruent to that of our rapidly shifting economic condition and focus on how to minimise the costs of fragmentation.

Supply chain diversification currently stands as the main action taken by economies and firms to cut potential losses. However, given the highly volatile and unpredictable nature of global markets, the temporary reallocation of supply chains risks future instability and insufficient disaster readiness (Whitney et al., 2014). To counteract this, the general policy approach taken by the Bretton Woods institutions is to stimulate multilateral cooperation. It could be argued that this objective is largely counterproductive, as the possibility of achieving global cooperation in an era of intense geopolitical hostility is minimal. Instead, this paper posits a pragmatic approach to ensuring harmonised and future-focused supply chain reconfiguration to alleviate the immediate costs of GEF.

Supranational governance and modulated supply chain reconstruction

Firstly, it is crucial that decaying supranational organisations reconnect with their Keynesian roots and play a stronger enforcement role in the global economy. Facilitating non-hostile, plurilateral reshoring policies between geographically and politically aligned countries can ensure robust supply chain stability through contractually binding already-cooperative countries to each other. The creation of such global production networks (GPN) is further supported through the advent of advanced analytical software, such as the AI network AIPNET, designed to analyse changing trade patterns and unprecedented granularity on a global scale (Fetzer et al., 2024). Future-oriented supply chain demystification can bolster long-term supply chain security and protect scarce resources from careless exploitation. The imposition of arbitrary tariffs and trade barriers may also naturally decline as a result, as economies begin to mutually benefit from the stability of their trading blocs.

This process of systematised decoupling, if imposed judiciously, can stimulate efficiency and growth within trading blocs. Krugman's New Trade Theory (1980) verifies the possibility of achieving increasing returns to scale when trading between countries with similar factor endowments, deviating from the neo-Ricardian Heckscher-Ohlin model. This is supported by the Linder hypothesis which argues that niche specialisation and the production of differentiated goods can enable similar cross-country trade (Linder, 1961). Regarding complex supply chain costs, Shiozawa (2016) highlights that the higher the trade cost, the more competitive a production process can be in its domestic and neighbouring markets. Such theories exhibit that near-shoring and localising supply chains can engender economies of scale by incentivising similar countries within trading blocs to concentrate their areas of comparative advantage. Expanding domestic production also increases investor confidence, as long-term, stable opportunities for production are made available. Steady capital investments can enable economies and firms to optimise their production practices and increase efficiency in the long run, reducing the need for harmful and complex short-term supply chains.

Liberalised knowledge diffusion

Secondly, global knowledge diffusion is instrumental to achieving global growth and efficiency. Under the status quo, innovation is fueled by Cold War-era competition; countries are eager to progress in technological sectors to reduce their substitutability with other nations and gain structural advantage in the global market (Huang, 2023., Lind and Ramondo, 2023). As established in the previous section, this process is largely counterproductive due to the large sunk cost of back-and-forth protectionist policies. Systematised decoupling and centralised knowledge diffusion can deter this process. Encouraging trade between cooperative economies means that technological similarity becomes less threatening to 'rival' blocs, as they retain their competitive advantage within their respective trading blocs. On a broader scale, policies aimed at derestricting technological knowledge can facilitate the optimisation of production and save global economies significant costs in R&D. Basic multilateral agreements aimed at relaxing intellectual property protections and bilateral research partnerships between trading blocs can be instrumental in transforming unhealthy competition into sustainable international development.

Consistency with the New International Economic Order

Lastly, systematised decoupling presents an optimistic opportunity for the economic development and liberation of EMDEs from Western hegemony. Unlike current decoupling trends under GEF, this process takes a 'carrot' approach to regionalisation through incentivising onshoring while enabling non-aligned countries to maintain ties between blocs. Under this system, trade barriers are assumed to reduce as global dependency organically diminishes and plurilateral agreements allow sectors to become more efficient (Hoekman and Sabel, 2021). EMDEs are therefore enabled to trade without exorbitant barriers and access the positive spillovers from global technological innovation in order to specialise and boost domestic secondary and tertiary sectors. EMDEs' primary sectors can remain competitive through supranational organisations closely working with trading blocs to create raw material trade agreements. The facilitation of ethical and green trade can mitigate the widespread exploitation across emerging markets, enabling socio-economic development. This remains consistent with the New International Economic Order proposed by EMDEs, which advocates for reduced commodity exploitation and 'trade not aid' (Laszlo et al., 1978, Susskind and Vines, 2024).

Detractors of systematised decoupling may argue that global GDP is still likely to decline due to condensed international capital flows. This may be true - yet, perhaps this is a trivial consequence. Raworth (2017) challenged the principle of unfettered economic growth in her seminal piece 'Doughnut Economics' by arguing for a radical reconstruction of humanity's priorities. This paper firmly echoes the need to shift our focus from the need for perpetual economic growth to other pressing concerns, such as ensuring the accessibility of basic needs, climate action, economic stability and social equality.

Conclusion

This paper merely scratches the surface of the complexity of geo-economic fragmentation, as its true nature is perpetually unravelling and changing with shifts in the geopolitical sphere. However, it is clear from the above analysis that the international trading system requires urgent, effective and centralised action in hopes of mitigating widespread destabilisation and tribulations in the long run, regardless of how GEF plays out. Plan continuation bias, sunk cost aversion and reluctance for global economic reform can no longer be used as an excuse to neglect the fundamental requirements of the 21st century; economic stability, efficiency and equity.

Global technological diffusion, plurilateral cooperation and GPN protection present a robust countermeasure for today's aggressive decoupling agenda; and if implemented sensibly, can eventually lead to the renaissance of multilateral cooperation and global unity. We must take a pragmatic and systematic approach to prevent the recurrence of the ending of the Silk Road and write a new chapter in the story of international trade.

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The Effect of Trade-Based Sanctions on the Russian Economy

Cormac Niland
Senior Sophister

"This essay explores the resilience of the Russian economy following the imposition of sanctions after the invasion of Ukraine in February 2022. Using the gravity theory of trade it critically examines the fluctuation of Russian imports and exports at the outbreak of war. An analysis of the reorientation of Russian trade from sanctioning to non-sanctioning markets is conducted, with emphasis placed on the role that third-country trade played in facilitating sanctions evasion and mitigating the negative effect of trade restrictions. Using an empirical analysis of the semiconductor industry, the essay concludes that the discrepancy between the theoretical expectations of the gravity model and the empirical evidence of observed trade patterns arose due to an inability of the model to account for third country trade evasion. It concludes by offering policymakers insights into reducing the impact of third-country trade evasion on sanctions policies."

Introduction

On February 24, 2022, after months of diplomatic efforts and speculation, Russia invaded Ukraine. In the weeks leading up to the attack, NATO allies, led by U.S. President Biden, repeatedly warned that any Russian aggression would result in "severe sanctions" with "massive consequences" for the Russian economy (Gaur et al, 2023). Despite these threats, Russia proceeded with its invasion. In response, most of the international community has steadily expanded its sanctions regime against Russia (see Figure 1 in the Appendix). However, after almost three years, there seems no end in sight for the conflict, with high-tech Western equipment continually found in captured Russian weaponry, despite the Russian economy largely detaching itself from Western markets (Darvas et al, 2023) (Siegal, 2023). It appears that the massive consequences promised by President Joe Biden have failed to materialise.

The paradox of a relatively strong Russian economy emerging after being shut out of Western markets challenges the effectiveness of sanctions as a threat to international diplomacy, highlighting the complex relationships between economic theories and political realities. Sanctions, defined as economic measures of political objectives, concerned with the actions and behaviour of governments against whom the sanctions are directed, have consistently grown in importance to global geopolitics and conflict (Barber, 1979) (Felbermayr et al., 2020). Despite economists reinforcing the necessity of sanctions in global diplomacy (Blackwill & Harris, 2016), traditional international trade models, such as the Ricardian or the Hecksher-Ollin, struggle to incorporate their effects (Capoani, 2013). Most analyses such as Caruso (2003) or Tyazhelnikov et al. (2023) rely on the gravity theory of trade to evaluate sanction regimes.

This essay follows previous literature in utilising the gravity theory of trade to examine Russian trade flows, arguing that the unexpected resilience of the Russian economy is due to a successful reorientation towards non-sanctioning trade partners. This is facilitated by sanctions evasion through third-country trade, where a third neutral country acts as an intermediary between Western and Russian markets. Incorporating these considerations is essential to fully understanding and addressing the extent to which Western sanctions remain ineffective.

In the interest of providing a more in-depth analysis, this essay will focus solely on physical goods sanctions, with a particular emphasis on semiconductors. Financial sanctions, such as the removal of Russian banks from SWIFT, will not be considered.

Theoretical Framework

To gain a better understanding of the dynamics of international trade following Western sanctions, it is important to conduct an analysis using theoretical frameworks that provide insights into how trade flows are expected to change. This section examines the gravity theory of trade, contextualising its application to Russia, and addresses its shortcomings in capturing sanctions evasion.

The gravity model derives from Newton's laws of gravity and is surmised through Tobler's first law of geography, according to which "everything is connected to everything else, but things near are more connected than things far". (Tobler 1970:537–542). The gravity model builds on this theory to state that a country's trading partners are proportional to their economic mass and proximity (Ekstam, 2023). In other words, the closer the countries are in terms of geographical distance and size of GDP, the more they are assumed to trade.

The theory, first applied to international trade by Tinbergen (1962), has performed better in explaining the dynamics of economies under sanctions than traditional trade models such as the Ricardian and the Heckscher–Olin (Capoani, 2013). Under the assumptions of gravity theory, the breaking of a link between a country's natural export and import markets should lead to less efficiency and greater costs as the targeted country reorientates trade from sanctioning countries to non-sanctioning markets. In the context of Russia, with industry oriented towards a Western European market, losing access to this market could result in an attempt to export their surplus to non-sanctioning nations such as China. This effect is reinforced by Caruso (2003), who uses a gravity model to examine the effect of US sanctions on 49 target countries from 1960 to 2000, and illustrates that the target nation reduced trade with the US, but increased trade with other G7 members.

However, this shift in trading partners is expected to lead to greater costs and difficulty in acquiring key imports as markets adjust. A less extreme example is Brexit, where the UK, facing greater import and export barriers with their largest and closest trading partner, finds itself unable to compensate for this loss with alternative trade deals (Brakman et al, 2023).

Although gravity theory is considered a highly successful tool in modelling international trade (Herman, 2023), it struggles to account for sanctions evasion through parallel trade, as Tyazhelnikov, Romalis, and Long (2023) asserted when examining divergences in predicted and actual Russian trade flows following the annexation of Crimea in 2014. They concluded that the discrepancy arose due to the inability of the model to capture the smuggling and importing of banned goods through third countries.

This essay examines both aspects of the gravity theory of trade in assessing how Russian trade partners have shifted in response to sanctions, and the costs that they have encountered. It concludes that the gravity model largely explains the movement in Russian trade patterns, but follows the assessment of Tyazhelnikov, Romalis, and Long (2023) in demonstrating that the negative effects of the change have been somewhat ameliorated by third-country trade.

Russian Trade Flows: An Analysis

This section examines shifts in Russian imports and exports following the invasion of Ukraine, assessing whether trade patterns have realigned in accordance with gravity theory. This proves challenging, however, as political interference and data manipulation by Russia's main statistics agency, Rosstat, have compromised the reliability of official figures. For instance, demographic data is now released only on Friday evenings, seemingly to limit public scrutiny and backlash (Starostina, 2022). To address these limitations, this analysis relies on reconstructed trade flow data, derived from customs records of Russia's trading partners. This dataset, initially developed by the Free Russia Foundation and later expanded by the Bruegel Institute, provides a more accurate picture of Russia's evolving trade relationships (Bienkowski et al, 2023; Darvas et al, 2024).

Examined below are two charts completed by Darvas, Moffat, and McCaffrey (2024). These clearly illustrate how the Russian economy has adapted to Western sanctions by importing from non-sanctioning countries (*Figure 2*) and exporting to non-sanctioning markets (*Figure 3*) in greater quantities, while drastically shifting away from sanctioning nations.

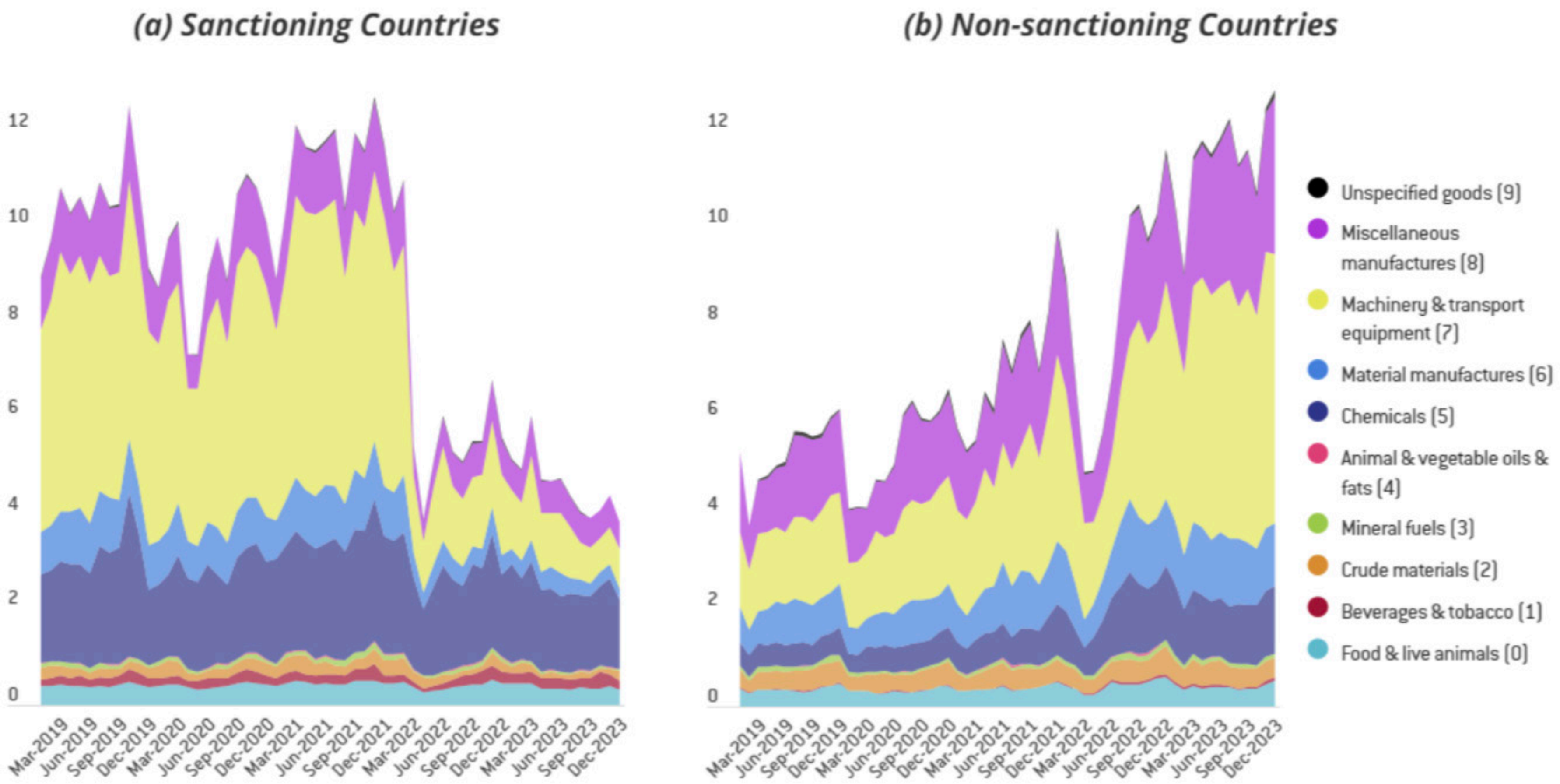

Figure 2: Russian Imports (Darvas, Moffat, and McCaffrey, 2024)

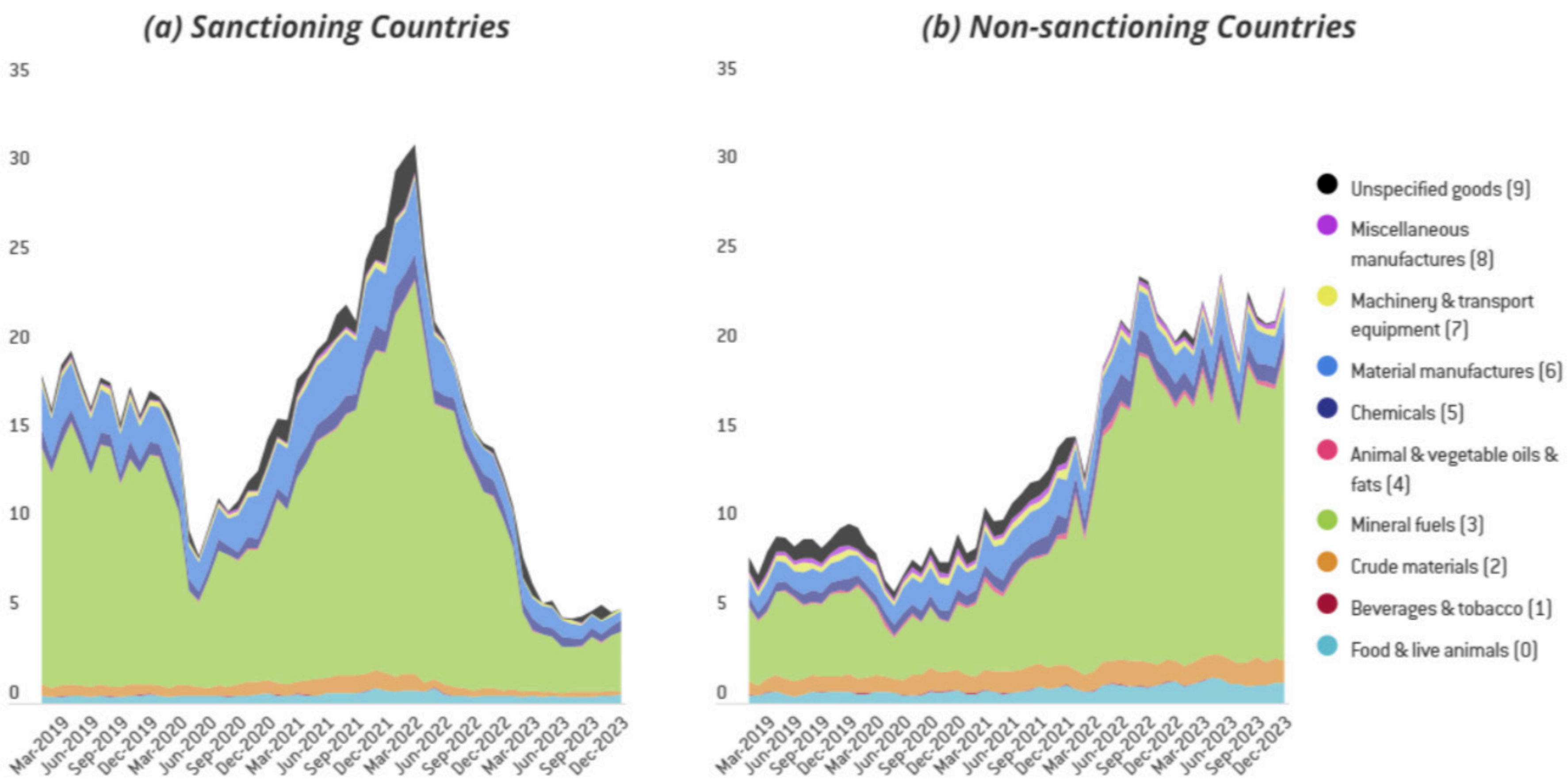

Figure 3: Russian Exports (Darvas, Moffat, and McCaffrey, 2024)

Prior to the war, Russian imports from sanctioning nations averaged \$10.5 billion a month, which more than halved to \$4.6 billion in 2023, a reduction of \$5.9 billion per month. From January 2019 to February 2022, non-sanctioning countries on average exported goods worth \$6.0 billion per month to Russia, which rose to \$11.5 billion following the outbreak of war, an increase of \$5.5 billion per month. This increase falls just marginally short of the reduction in exports from sanctioning countries. This indicates that since the outbreak of war, Western exporters have been almost entirely replaced by firms in non-sanctioning countries.

The primary sectors of Russian import fluctuation have been in machinery, manufacturing, and transport. This is particularly acute in the auto industry, with Chinese car brands beginning to dominate the Russian market, and jumping from 9% of total market share in 2021 to 61% in 2023. In this period, six Chinese car companies entered the top 10 in terms of sales, a significant increase from zero before the war (Partsvania, 2024). This trend in the auto industry exemplifies how retreating Western firms have rapidly been replaced by their counterparts in non-sanctioning nations.

Similarly, Russian exports to sanctioning countries fell by $12.4 billion, with an increase in exports to non-sanctioning countries of $12.0 billion, marginally less than fully compensating for this change. Thus, the rise in demand by developing countries has not yet replaced the initial drop, however, if the upward trend continues, it may do so.

A closer examination of the shift in Russian exports reveals that Russian dependence on developing nations could instead be characterized as a growing dependence on China, India, and Turkey, with China becoming especially influential as a trade partner. In 2022, China, India, and Turkey made up more than half of crude oil exports, up from one third in 2021 (Bienkowski et al, 2023). Similarly, four countries, China, Germany, Turkey, and South Korea, accounted for over 50% of Russian imports (Bienkowski et al, 2023). The concentration of Russian trade into a smaller number of partners has only accelerated since 2022, with reports indicating that in the first half of 2024, China accounted for 40% of Russia's imports and over 30% of its exports (Kalwasinski & Wisniewska, 2024).

Russian trade dependence on China is staggering, but not particularly surprising considering the assumptions of the gravity model of trade. Having been shut out of Western markets, both imports and exports have begun to flow towards geographically near and similarly-sized economies. In Russia's case, this entails greater links to the predominant powers near its non-EU borders, links with China and Turkey. However, another assumption of the model is that this readjustment will create bottlenecks and supply shortages as non-sanctioning exporters adjust to Russian demand. A report by the Central Bank of Finland indicates that to some extent this has occurred, demonstrated in Figure 4 (Cook, 2024; Simola, 2023), with Chinese manufacturers taking advantage of Western sanctions by jacking up prices for Russian importers.

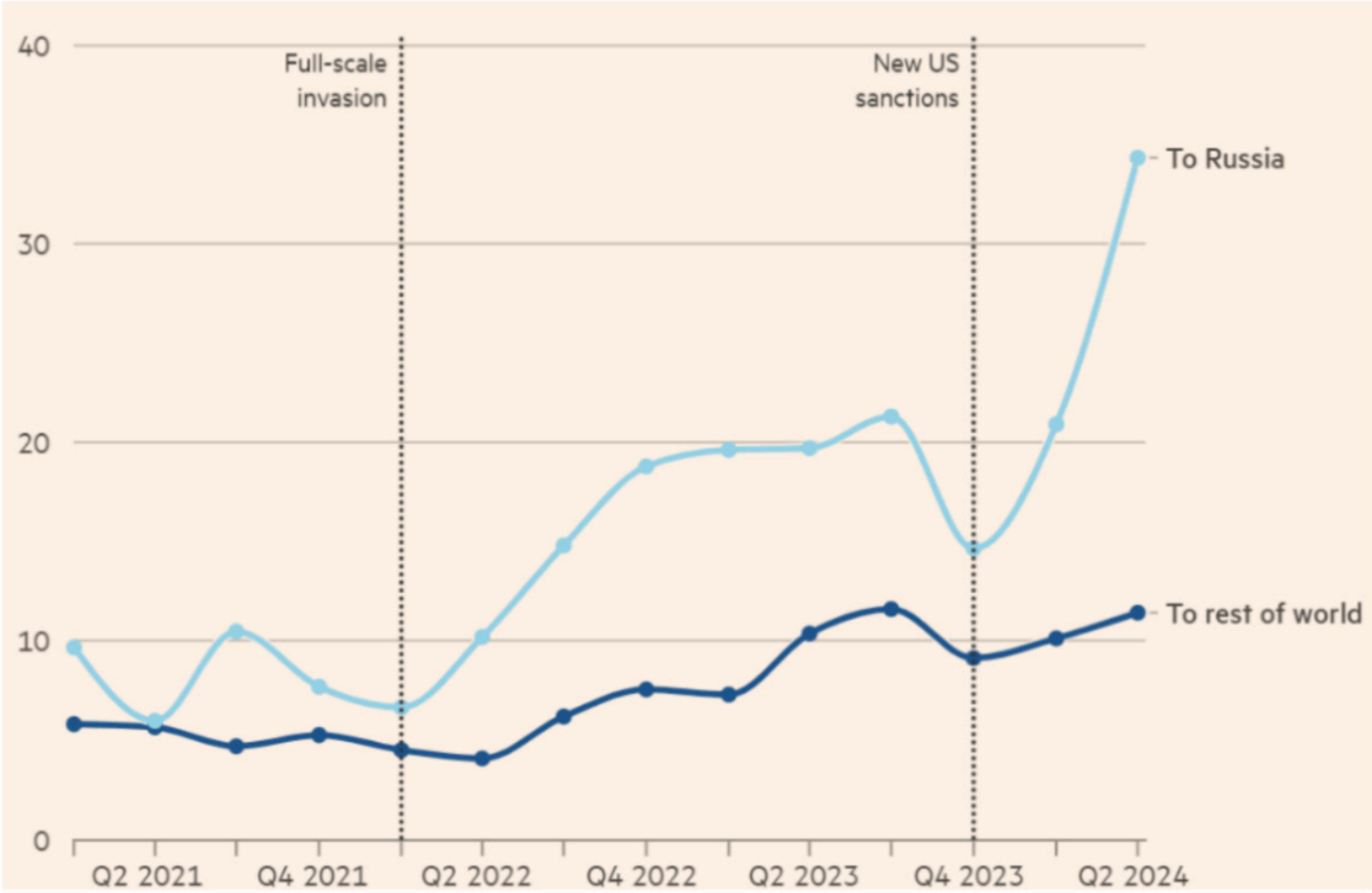

Figure 4: Price per kilo of machine tool special attachments shipped from China (Cook, 2024)

Despite this, the majority of high-tech shortages which initially materialised due to Western sanctions disappeared after only a few weeks (Bilousova et al, 2023). The short-term impact was highly disruptive for the Russian economy but diminished over the medium term (Bienkowski et al, 2023). Since then, it is clear that the teething issues of reorienting Russian trade away from sanctioning countries were at least partially ameliorated. This indicates that the gravity model alone cannot explain the dynamics of Russian trade flows. The next section will explore possible explanations, with reference to semiconductor trade, a key target of Western sanctions.

Sanctions Mitigation

This section addresses possible explanations for the underwhelming effects of Western sanctions on the Russian economy, through the lens of Russian semiconductor production and imports. Semiconductors were subject to widespread Western sanctions and quickly recovered from an initial shortage at the outset of the war. Thus, they provide an ideal instrument to examine how sanctions have been mitigated.

Russian Domestic Production

A plausible explanation for the rebound in the supply of semiconductors in Russia is a rise in domestic production. However, this seems unlikely given the significant brain drain caused by the outbreak of war and the ongoing challenges faced by the Russian government in retaining engineering talent (Sherman, 2024). Furthermore, reports indicate that domestic firms are struggling to scale up production (Urusov, 2023) alongside ongoing complaints about persistent defects in Russian chips (Kholupova, 2024). With such constraints, it is highly unlikely that Russia's domestic industry has effectively fulfilled demand (Bilousova et al., 2023).

Imports

Without a clear rise in domestic production, it can be assumed that the deficit has been made up by imports. An examination by Bienkowski et al (2023) illustrates how the number of Russian semiconductor imports have shifted (Figure 5). The impact of Western sanctions is revealed by the contrast between German and American exports, compared with those of Hong Kong and China. The value of Chinese semiconductor exports to Russia doubled from $200 million in 2021 to well over $500 million in 2022.

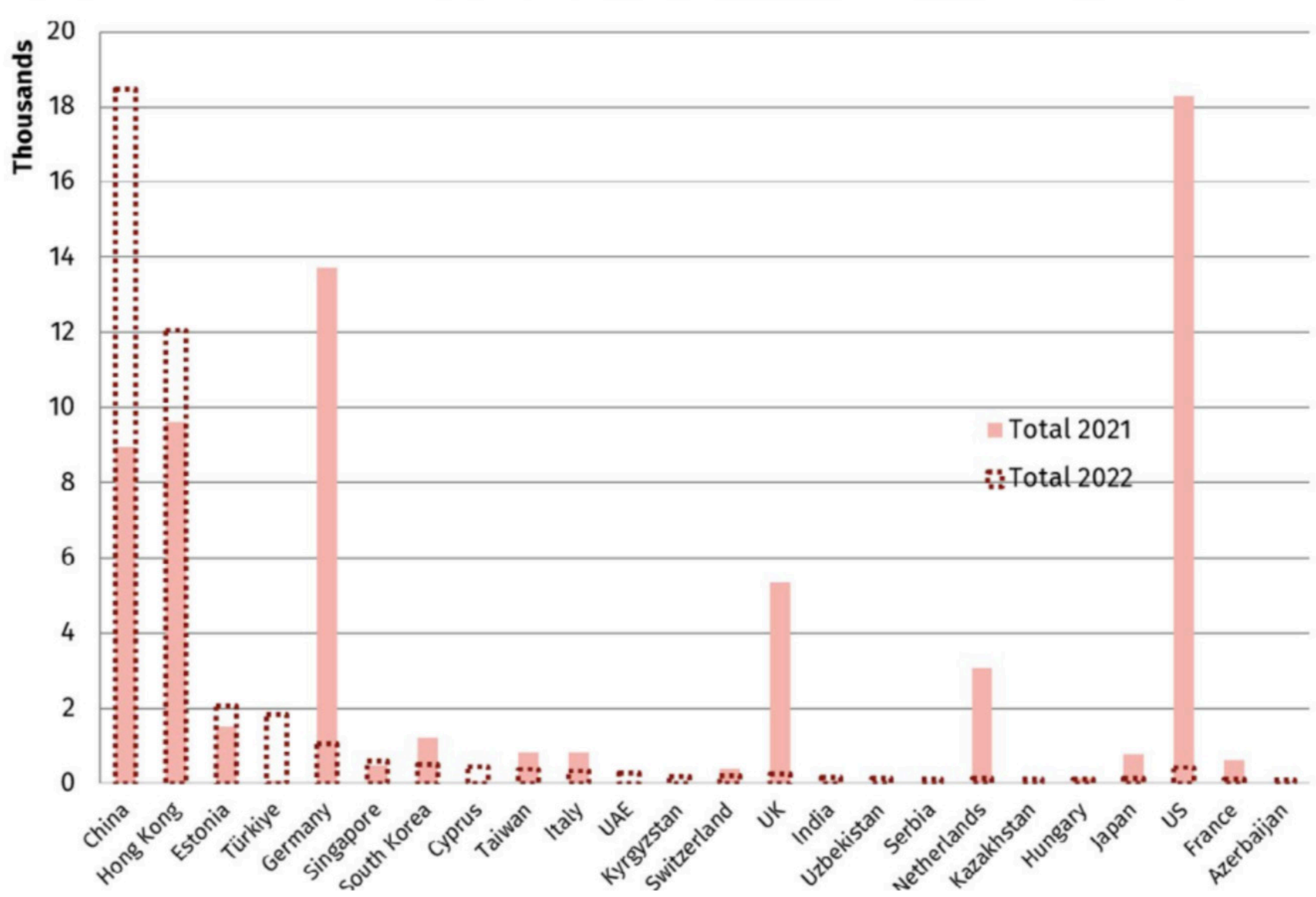

Figure 5: Russian imports of semiconductors; no. of transactions (Bienkowski et al, 2023)

While growth in Chinese production appears a plausible explanation for the absent shortages, further research from the Kyiv School of Economics shows that rising Chinese semiconductor sales have far outpaced domestic semiconductor production (Figure 6), and 55% of semiconductors acquired from China are being produced elsewhere (Bilousova et al, 2023). This indicates that instead of rising to meet Russian demand, China has begun importing Western chips and selling them on to Russia. This finding is supported by a Nikkei report claiming that 75% of American semiconductors in Russia came through Hong Kong or China (Nikkei, 2023), alongside other studies detailing widespread sanctions evasion by Russian agents using third country trade (Byrne et al, 2022) (Bilousova et al, 2023) (Kupatadze & Marat, 2023).

Figure 6: Russian semiconductor imports from China; Delivery vs Origin (Bilousova et al, 2023)

In line with previous research on Russian trade flows by Tyazhelnikov, Romalis, and Long (2023), such actions by Russian actors have likely ameliorated the negative effects of sanctions on the Russian tech industry. The extent to which third country trade has insulated the entire Russian economy is difficult to ascertain but is explored by Borin et al (2023). They estimate that the value of parallel trade could represent around 10% of the fall in EU restricted exports to Russia in 2022. The total decline in such EU exports was $7.5 billion, while they calculate the potential re-routing of EU restricted products to be $760 million. Such a significant figure may explain why, despite initial success, Western sanctions have struggled to limit Russian access to high-tech implements, and why the Russian economy has shown surprising resilience.

The next section will outline potential approaches for policymakers to address the impact of third countries in sanctions evasion. These strategies will focus on increasing cooperation, engagements with key companies, and the threat of secondary sanctions.

Possible Policy Adjustments

Mitigating the risks of third-country sanctions evasion demands coordinated international efforts and enhanced enforcement measures. Strengthened information sharing, tighter scrutiny of high-risk companies, and the credible use of secondary sanctions serve as essential tools in combating Russian sanctions evasion.

Improved Cooperation

An essential first step in tackling third-country trade is increasing information exchange between sanctioning nations. Coordination of policy with partners, detection of evasion schemes, and enforcement of sanctions can all be amplified by the increased sharing and standardisation of economic data, the establishment of an alternative source for gauging the state of the Russian economy is essential.

Engagement with Key Companies

A report by Bryne et al (2023) found that, of the 450 types of foreign made components in the Russian military, more than 200 are produced by just ten companies. A significant number of these components are currently under export controls yet are still obtained by the Russian military, likely through third country intermediaries. Greater engagement with these few companies should enable policymakers to close loopholes within Western sanctions regimes and identify third-country facilitators.

Threat of Secondary Sanctions

Secondary sanctions are a crucial tool in curbing third-party trade that undermines primary sanctions. Unlike direct sanctions, which target specific entities or countries, secondary sanctions extend restrictions to businesses and individuals from third-party nations that engage with sanctioned entities. This creates a deterrent effect, shown to discourage companies from conducting business that could indirectly support sanctioned regimes (Hartwell, 2024). Their effectiveness lies in isolating harmful actors, cutting off economic lifelines, and reinforcing broader geopolitical strategies aimed at pressuring sanctioned states to change their behaviour.

Conclusion

In conclusion, this essay has examined how the Russian economy has adapted to trade-based sanctions imposed after the invasion of Ukraine, highlighting the role of third-country trade in mitigating economic shocks. The shift in Russian trade flows away from Western markets toward non-sanctioning nations such as China is explored through the lens of the gravity model of trade. Third-country trade has played a crucial role in sanctions evasion, as demonstrated by the fact that much of Russia's semiconductor imports from China are actually produced elsewhere.

It is evident that the current sanctions regime falls short in addressing the prevalence of third-country facilitated evasion, underscoring the need to adopt policies addressing information sharing between countries, engagement with key companies, and the more effective use of secondary sanctions. This essay offers a framework for developing new sanctions policies that account for the complexities of global trade and the evasive strategies employed by targeted economies. By incorporating these insights, policymakers can design sanctions that are both more robust and impactful.

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APPENDIX

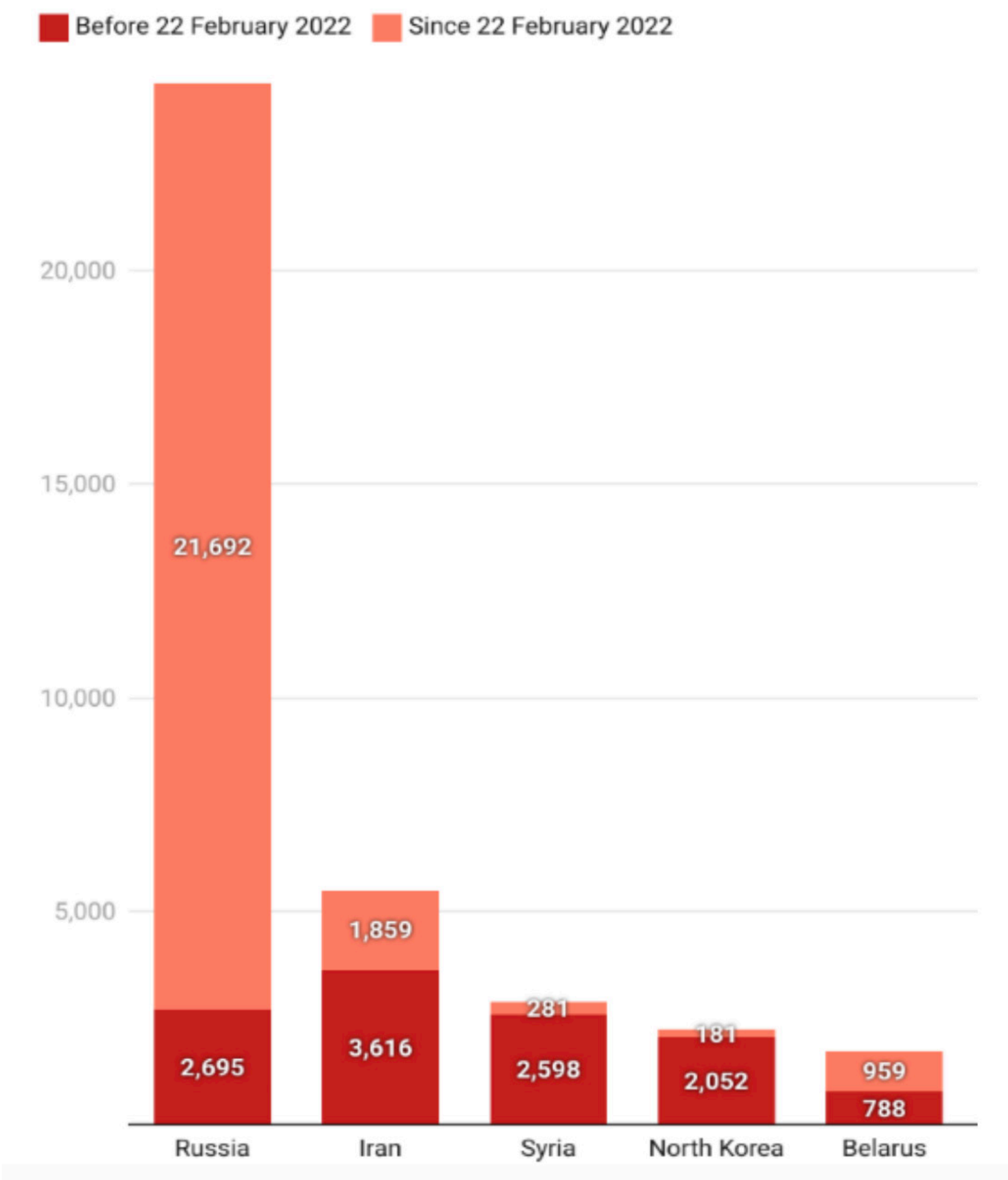

Figure 1: Sanctions per country on entities, individuals, vessels, and aircraft as of January 19th 2025

THE EUROPEAN UNION'S POST-2008 GROWTH DILEMMA: PRODUCTIVITY, POLICY, AND INTEGRATION

CONAL GILLESPIE

SENIOR SOPHISTER

"This paper examines the post-2008 economic trajectory of the European Union, analysing the impact of the Global Financial Crisis (GFC) on growth, productivity, and human capital. It explores how declining total factor productivity and weak labour mobility contributed to prolonged stagnation. Additionally, it highlights the structural weaknesses of the Eurozone, including the lack of fiscal integration and asymmetric shock absorption. Comparing the EU's economic performance to the US, the study underscores the need for enhanced policy coordination, labour mobility, and productivity growth. Addressing these deficiencies is crucial for the EU to maintain competitiveness and achieve strategic economic autonomy."

Introduction

Particularly in the aftermath of the 2008 financial crisis, the trajectory of economic growth inside the European Union has been the focus of extensive research and discussion. This crucial event signalled a substantial halt to the union's previously steady economic growth, raising concerns over the future economic health and competitiveness of its member states (Baldwin and Wyplosz, 2022). This essay aims to examine this slower growth trend firstly through the factors of productivity, and secondly through human capital within the context of European integration through free movement. The essay then discusses how a lack of fiscal integration generated barriers that created policy concerns for handling the Global Financial Crisis and returning the EU economy to growth. By focusing on this issue, this essay recognises the importance of returning EU economic growth to a level that remains competitive with the other major powers such as the US and China. This will ensure the EU is in a strong economic position to decide its position in the recently changing world order and have strategic autonomy.

The 2008 Global Financial Crisis (GFC)

Prior to the GFC, the economy of the EU experienced steady growth that bar a few exceptions, saw the growth rates of the member states' economies consistently higher than levels evident in the decade following (Grabia, 2019). This trend also translated into real tangible changes in the relative standing of the EU to the US as the period also marked a point where the EU possessed an economy that had become larger than that of the US (Rachman, 2023). In the context of this period were the monumental changes occurring within the EU including increasing market integration through the establishment of the Eurozone and the influx of new member states with the eastern expansion of the EU. However, as is evident in *Figure 1*, post-recovery average growth rates have been significantly lower for member states in comparison to the levels witnessed before the GFC, the recovery period being 2007-2012 and post-recovery being 2013-2018. While this paper does not focus on a detailed analysis of the causes and effects of the GFC on the EU economy, it is necessary to examine how the crisis contributed to the EU's prolonged period of below-average growth. This involves the introduction of other economic factors into our analysis such as productivity (which takes into account technology) and human capital.

Country	2000--2018	2000--2006	2007--2012	2013--2018	Country	2000--2018	2000--2006	2007--2012	2013--2018
Ireland	**5.0**	**5.9**	**–0.3**	**9.2**	Cyprus	2.0	3.6	0.9	1.4
Lithuania	4.2	7.2	1.7	3.2	Croatia	2.0	4.4	–0.7	1.8
Romania	4.0	5.6	1.9	4.5	**United Kingdom**	**1.9**	**3.1**	**0.5**	**2.0**
Estonia	4.0	8.0	0.3	3.2	**Spain**	**1.8**	**3.6**	**–0.4**	**2.0**
Latvia	4.0	8.3	–0.2	3.1	**Austria**	**1.7**	**2.3**	**1.1**	**1.5**
Slovakia	3.9	4.9	3.4	3.2	**Finland**	**1.6**	**3.3**	**0.3**	**1.1**
Poland	3.8	3.7	4.0	3.6	**Netherlands**	**1.5**	**2.0**	**0.7**	**1.8**
Bulgaria	3.6	5.7	2.2	2.8	**Belgium**	**1.5**	**2.1**	**1.1**	**1.3**
Malta	3.6	1.5	2.1	7.2	**Italy**	**1.5**	**4.4**	**–0.9**	**0.5**
Luxembourg	**3.1**	**4.5**	**1.6**	**3.1**	**Germany**	**1.4**	**1.4**	**1.2**	**1.7**
Czechia	2.9	4.5	1.1	2.9	**France**	**1.4**	**2.0**	**0.7**	**1.3**
Slovenia	2.4	4.0	0.3	2.8	**Denmark**	**1.2**	**1.9**	**–0.2**	**1.8**
Hungary	2.4	4.1	–0.8	3.5	**Portugal**	**0.7**	**1.4**	**–0.7**	**1.4**
Sweden	**2.3**	**3.2**	**1.0**	**2.6**	**Greece**	**0.4**	**4.3**	**–3.9**	**0.1**

Figure 1: Average real GDP growth rate in the EU-28 in 2000-2018 (U.K. inclusive) (Grabia, 2019)

Determinants of Economic Growth

Recent trends have shown that Europe as a whole has been falling increasingly behind the frontier of world productivity; the US being the measure of this frontier (Fernald and Inklaar, 2020). This poses an interesting note in our analysis as "productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker" (Krugman, 1997, p. 11). Total factor productivity growth, which accounts for both the workforce's educational background and observed capital growth, was found to be either negative or zero for nearly all EU members for the post-GFC period of 2007-2018 (Fernald and Inklaar, 2020). The limited growth in TFP has been the cause of the sluggish increase in labour productivity (Fernald and Inklaar, 2020). This lack of growth in productivity beginning after the GFC also aligns with the decline in GDP growth, suggesting it is a possible component of our lower post-crisis growth trend (Grabia, 2019). The anaemic labour productivity growth also poses a further concern since the EU will need growth in labour productivity to counteract the decline in the quantity of labour due to its ageing population.

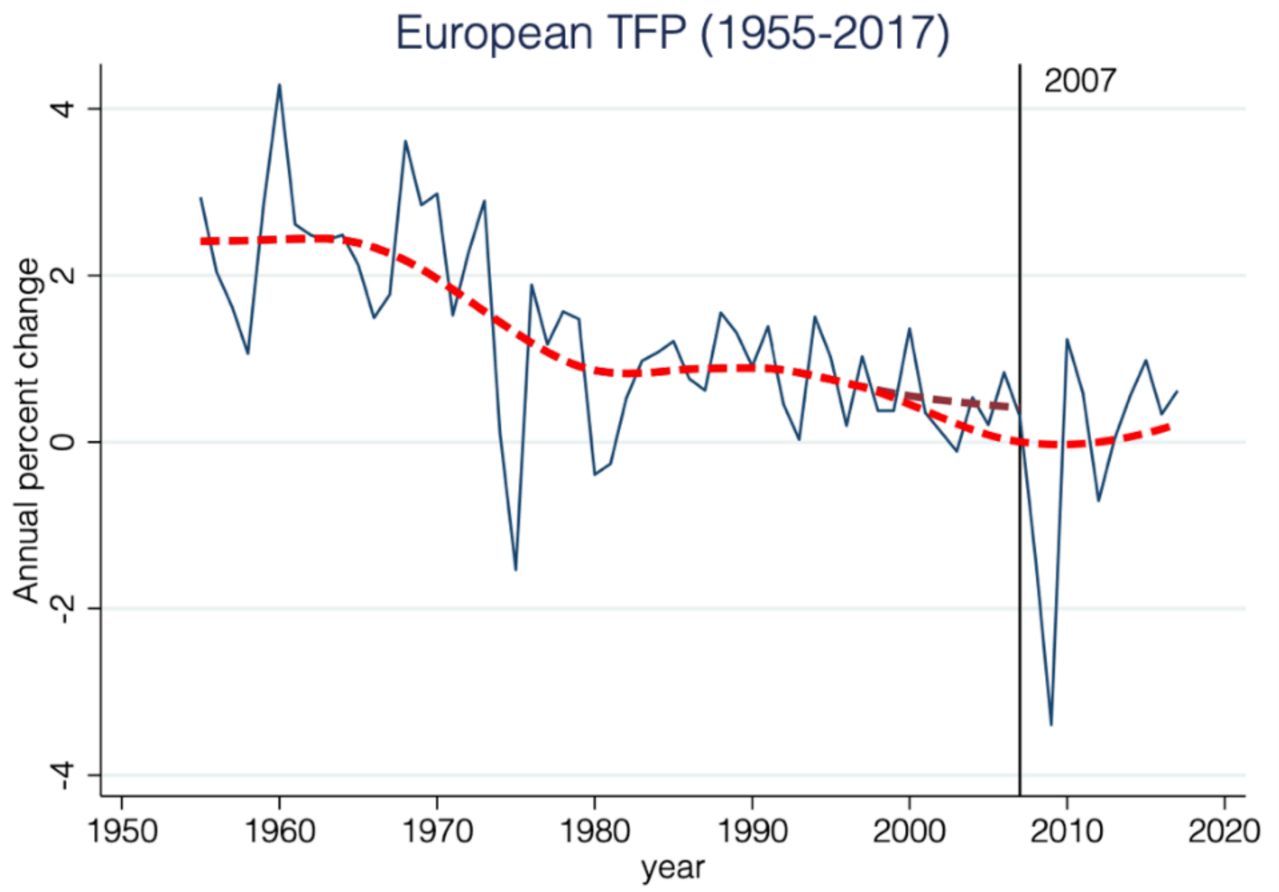

Figure 2: European total factor productivity growth for the EU-15 (Fernald and Inklaar, 2020)

Another component of economic growth is human capital and its mobility. As mentioned previously, further market integration efforts resulted in the creation of the Euro. With a large part of the EU economy operating under the Eurozone, some member states experienced the combination of a single currency alongside free mobility. This therefore requires the introduction of Mundell's concept of the Optimal Currency Area (OCA) (Mundell, 1961). According to Mundell (1961), a currency area's ability to successfully function and provide growth depends on labour mobility. He argues that in the absence of flexible exchange rates, which would provide a different way to absorb economic shocks, there must be a significant degree of labour mobility across areas within the currency area in order to address regional differences in wage levels and unemployment. Labour can then relocate from places with lower labour demand to areas with higher demand, which functions as a self-correcting process and promotes economic progress. The Treaty of Rome created freedom of movement inside the Eurozone, allowing any person to travel freely among its member states (Vasilopoulou and Talving, 2019). Very low levels of mobility were seen prior to this establishment, with only 1% of EU residents residing in a nation different from their place of birth (Vasilopoulou and Talving, 2019). As shown in Figure 3 below, the introduction of freedom of movement together with the euro led to a rise in net migration in the Eurozone nations. Considering that "the strongest indicator for labour mobility is the net migration rate" this increase is notably significant (Puiu, 2011).

Net migration in the euro area countries
(Average annual net migration as share of population in per cent)

Country	1991-00	2001-10	Country.	1991-00.	2001-10.
Austria	0.3	0.45	Portugal	0.19	0.34
Belgium	0.14	0.49	Spain	0.33	1.12
Finland	0.12	0.19	Greece	0.68	0.33
France	0.05	0.22	Cyprus	1.01	0.98
Germany	0.41	0.11	Malta	0.18	0.43
Ireland	0.3	0.68	Slovakia	-0.09	0.06
Italy	0.06	0.65	Slovenia	-0.05	0.34
Luxembourg	0.95	1.17	Estonia	-0.98	0.01
Netherlands	0.24	0.08			

Figure 3: Net Migration in the euro area countries (Vasilopoulou and Talving, 2019)

Given that labour mobility can, on average, absorb 25% of asymmetric shocks, it would be beneficial to have high labour mobility to mitigate the worst effects of shocks such as the GFC (Jauer et al., 2019). Although the rise in net migration suggests that labour mobility inside the Eurozone has improved, its significance cannot be understood without a comparable scale, such as the United States, another significant economy that allows for freedom of movement. Despite recent increases, labour mobility in the Eurozone still appears to be extremely low when compared to the US in Figure 4 (O'Rourke and Taylor, 2013). This is a cause for concern as its labour mobility is insufficient to help member states cope with asymmetric shocks such as the GFC.

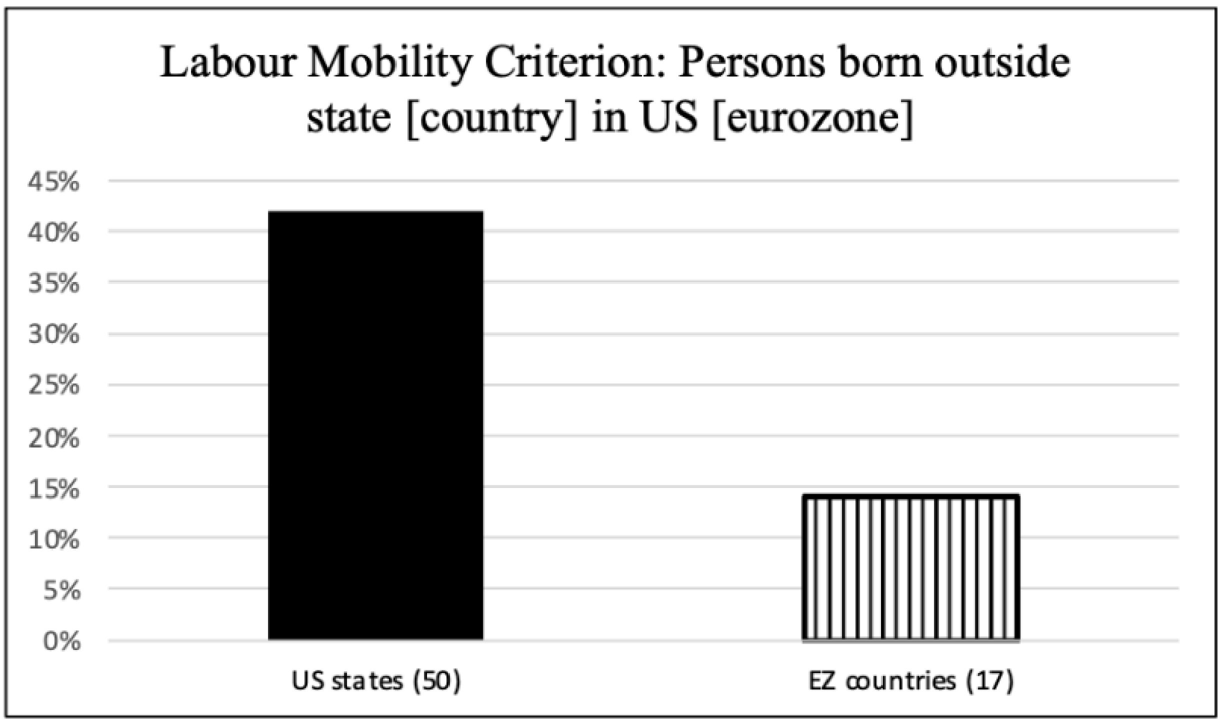

Figure 4: Labour Mobility Criterion (O'Rourke and Taylor, 2013)

If the level of mobility of human capital before 2008 was already below the sufficient level needed for the EU to absorb the effects of the GFC by reallocating labour efficiently, then this could serve as the possibility as to why the post-2008 GDP trend saw a lower level of growth. It would not be unreasonable to propose that if labour mobility was not adequate to reallocate labour during the GFC then labour would have difficulty in reallocating itself back to positions of its pre-2008 trend therefore creating the new lower trend of growth that was discussed earlier.

Policy Issues

This leads our analysis to the GFC itself. The Global Financial Crisis and the later European sovereign debt crisis had asymmetric effects on the EU member states, meaning each country suffered to different degrees (Fatás and Mihov, 2010). This analysis can be further separated into peripheral nations like Greece and Portugal and core nations like France and Germany. Numerous economies with varying budgetary systems and competitiveness levels make up the Eurozone. Compared to countries on the periphery, these "core" countries often have stronger budgetary balances and more resilient and diverse economic frameworks (Bartlett and Prica, 2016). Periphery economies are already more susceptible to asymmetric shocks because of their limited industrial diversity and weaker financial standing. In the Eurozone, nations with weaker fiscal positions must rely on debt-financed fiscal measures to manage asymmetric shocks, as they lack independent monetary policy tools; this reliance exposes them to long-term vulnerabilities. In the context of this situation, the Eurozone operates "in the inherent contradiction between a single, supra-national currency and the maintenance of nation-based fiscal policies and financial regulation" (Degiannakis et al., 2016, p. 561). This contradiction creates policy issues for the handling of asymmetric shocks such as GFC.

A risk-sharing mechanism to allocate funds to regions that suffer from a downturn is also a necessity for the handling of asymmetric shocks for currency unions to optimise growth (Mundell, 1961). The Eurozone does not yet have an independent budget that would enable it to directly address regions that are negatively impacted within its currency area (Praussello, 2017). Each member state is responsible for handling its own asymmetric shocks through its policies and debt issuance. Hence, there is no major fiscal and monetary coordination between member states or with the ECB throughout the Eurozone and therefore for a large part of the EU. By issuing bonds in a currency they do not control, member nations also assume personal risk associated with debt; "it is as if each of these governments issues debt in a foreign currency" (De Grauwe, 2022, p. 273). This is despite the fact that a failure in even one of the bonds of a member state would have disastrous effects on the EU economy as a whole, meaning Euro-dominated debt is issued with individual risk but with collective consequences.

The combination of a lack of fiscal coordination within the structure of a supra-national currency could suggest that the EU as a whole could not efficiently target its resources to return its economies to its previous trend prior to the GFC. While it could be argued that the existence of these flaws before the GFC should have resulted in lower growth prior to 2008 and therefore its effects post-2008 are insignificant, it is more likely that the GFC simply exposed these vulnerabilities within the EU's economic structure and these vulnerabilities hampered its response from that point onwards. Its decade-long lower growth will likely continue until these flaws are corrected.

Conclusion

In summary, major obstacles that have altered the European Union economy's growth trajectory and shown fundamental weaknesses have been discussed for the period post-2008. A period of steady expansion was interrupted by the 2008 Global Financial Crisis (GFC), which also exposed serious flaws in the EU's economic structure. Productivity and human capital, which are both impacted by the EU's integration dynamics and the link between the Eurozone and the EU, were identified in this essay as the two main causes of this slower growth. The decline in Total Factor Productivity (TFP) growth post-GFC suggests a link to the sluggish increase in labour productivity, exacerbated by an ageing population. The EU is lagging behind the US in productivity, which emphasises the need for more focus on efficiency gains and technical breakthroughs. In addition, although gains have been made since the Treaty of Rome, the EU's labour mobility is still insufficient compared to economies such as the US. This hinders the region's capacity to absorb and rebound from economic shocks like the GFC effectively. Overall, the economic picture for the EU after 2008 emphasises how urgently changes in labour mobility, productivity growth, and fiscal policy cooperation are needed. In order for the EU to successfully adjust to the shifting global order and restore its competitive advantage in the global economy, these issues must be resolved. Strategic autonomy and a coordinated approach to economic policy will be essential to guaranteeing a strong and resilient economic future as the EU navigates these difficulties.

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LABOUR ECONOMICS.

For-Ghent not thy Labourers' Rights: A Comparative Analysis of Efficiency & Justice Between Ghent Sweden and non-Ghent Norway

Tara O'Neill

Senior Sophister

"There's more work for every man.
Swell high the song; For man's best powers,
More hours! more hours! more hours!

In all the walks where men are pining,
Where honest men for loved ones toil
To furnish bread for those most dear;
Or where ignorance glooms or penury lowers,
Less hours! less hours! less hours!"
-Woodcarvers' Journal (1903)

Introduction

The extent to which society should give up its economic and social freedoms to rely on public policy and finance provides the prima facie case for labour markets' determination benchmark. However, government interventions are non-negotiable as labour markets are vulnerable to monopolies and asymmetric information. Therefore, the key consideration is how to uphold the trade-off between economic efficiency and social justice. The European Union (EU), as a supranational union of 27 Member States, accounts for labour market motions similarly and must consider the further inflations and intricacies that follow with the simultaneous cohesion and variation of decision-making. Divergence in methodological approaches to labour markets can aid our ability to conduct comparative analysis on EU-wide patterns of future policy implementations. This essay aims to address whether the EU should become more efficient or equitable in labour market approaches through a study of the ideologies and applications of Sweden's Ghent and Norway's non-Ghent systems regarding public politics, working conditions, and gender equality of labour markets.

This essay seeks to demonstrate the trade-off between economic efficiency and social justice in EU labour market relations. To do so, it will first examine the evolution of neo-liberal labour politics and the role of collective negotiation, comparing Sweden's Ghent system with Norway's non-Ghent model. Following this, it will assess the contemporary challenges associated with labour market conditions, particularly in the face of globalisation and precarious work conditions. To conclude, gender disparities in labour relations are examined to demonstrate the limitations of trade union representation for women. Such insights will be summated to argue that despite Sweden and Norway's contrasting models of labour relations, both underscore the necessity for EU-wide labour market reforms that balance efficiency with equity.

Neoliberal Labour Politics and Collective Negotiation

Keynesian politics gave way to neo-liberal agendas following the end of the long post-war boom in an attempt to 'free' markets from the seemingly unnecessary collective bargaining of trade union organisations (Waddington and Hoffmann: 2000); such liberalisation implies compositional specialisation of industrial activity. However, the well-established Organisation for European Economic Co-operation under the 1948 Marshall Plan meant that EU Member States were constrained by regulated and coordinated institutional structures which prohibited them from venturing towards the same neo-liberal capitalist pursuit enjoyed by the United States of America. The 1987 Single European Act ushered further mobility through the euro project that aimed to achieve the 'Four Freedoms' of goods, people, services and capital; an agenda later solidified by the 1992 Maastricht Treaty (Baldwin and Wyplosz: 2022). Since then there has been an ever-growing economic disparity between and within countries, calling into concern the reality of a 'multi-speed' EU. This is of particular concern in labour markets as it is the relative price of livelihood: human capital.

The management of welfare payments, specifically unemployment benefits, is a matter of great importance. The Ghent system is an arrangement whereby the main responsibilities of such are held by trade unions rather than government agencies; also known as voluntary unemployment insurance (UI). Through this format, the state plays only a regulatory and supervisory role providing "subsidies to contribute to the funding of unemployment benefits" (Shin and Böckerman, 2019: 922). Under the aforementioned neoliberalism, Nordic Ghent countries introduced independent UI funds that employees could participate in without union membership, thus leading to a gradual demise in trade union membership densities.

Sweden and Norway are countries sharing commonality in geography and history, yet differ in their application of the Ghent system, or lack thereof. Therefore, from a causal inference perspective, we can assume somewhat externally valid results that speak to the role of Sweden's Ghent system, promoting social justice through trade unions for collective action, and Norway's non-Ghent system, featuring arguably more efficient results in labour market affairs. The Swedish model's spirit of cooperation entailed self-regulation by the labour market parties themselves, through collective agreements, instead of state regulation utilising legislation (Kjellberg, 2000). The relatively successful union role in the Norwegian social compromise can fall short in legitimacy due to the flat wage increases of the solidarity alternative and threats of erosion (Dølvik, 2000). This aggregate decline in political power has occurred due to substantive political-economic setbacks brought by collective bargaining decentralisation and labour market re-commodifications (Scruggs, 2002); labour is a political matter and thus rises and falls on such.

Though many European states have associated social protection with being paramount to economic efficiency, Nordic countries have combined both social justice and efficiency by providing obligations for those who are receivers of the generous unemployment benefit (Baldwin and Wyplosz, 2022). However, Norwegian trade unions have never challenged employer prerogatives as Swedish unions did, but rely heavily on institutionalised political cooperation with the Labour Party – the so-called 'faglig-politisk samarbeid' (Dølvik, 2000). European-wide co-ordination of collective bargaining policies has been the subject of debate within trade unions since the early 1990s as it draws a clear distinction between social dialogue at the EU level and the development of an "autonomous European system of negotiations between the social partners" – requiring synchronisation of coordination to be developed employing a bottom-up strategy (Waddington and Hoffmann, 2000: 648). This requires ever-growing attention as we consider the adaptations needed in EU labour markets to deal with the new era of precarious work coupled with ever-increasing expectations for labour satisfaction and conditions.

Incompatible Expectations and Realities of Labour Market Conditions

Globalisation has resulted in a contradictory paradox whereby labour markets become increasingly cut-throat in their competitive constraints, yet allow younger generations to 'dream to achieve' like never before. In other words, work is no longer just about output towards sustenance, but increasingly post-materialist in its attitudinal expectancies. Migration patterns are one of the key drivers of this change, as the tension lies between labour supply and demand. From a simplistic economic viewpoint of the labour market, migration results in increased supply on fixed demand resulting in reduced wages for all. The rise of multinational corporations (MNCs) and continuing shifts in the composition of the labour force from manufacturing towards private sector services threatens union representation in the national arena; employment reduction in areas of traditional trade union membership strength (Waddington and Hoffmann, 2000). Downward wage spirals and asymmetric shocks evoked by considerations for social dumping to achieve on-par competitiveness with MNCs will undoubtedly lead to both increased unemployment and depletion in working conditions. Therefore, trade union survival faces a crossroads whereby they must provide higher priority to international cooperation between union confederations to strengthen unions in countries where they are in a weak position vis-à-vis employers. However, this must be done in a manner that matches a national context in the labour market and in society (Kjellberg, 2000). A negative externality of such globalising effects is atypical, or precarious, employment becoming widespread since the late 20th century and increasingly risky due to the heightened social, economic, and political forces presently at play (Shin & Böckerman, 2019).

In the case of Ghent Sweden, employees can freely decide whether to join a UI fund, yet are less likely to do so if employed precariously. This constitutes a "policy-relevant margin of adjustment" as these are the working subgroups that possess a higher likelihood to require welfare benefits than those in standard employment (Shin and Böckerman, 2019: 922). Norway has featured a post-war boom seen in the declining percentage of people in part-time employment from 23% in 1973 to 21.2% in 1997. Sweden's rate of part-time employment has steadily increased due to employers' attempts to increase working time flexibility, workers' choice for hours which are appropriate for their private lives, and the result of union negotiations (Waddington and Hoffmann, 2000). This quantitative reality has implications when viewed in light of the business cycle thesis that union density should grow slower in non-Ghent Norway when unemployment increases and have the opposite effect in Ghent Sweden, where more workers face the financial risk of unemployment and seek security in union-run unemployment insurances (Scruggs, 2002). This relates to 'Olson's Theory of Collective Action' which focuses on whether individuals decide to participate based on their cost–benefit comparisons (Shin and Böckerman, 2019). However, in much of EU society today, social conventions that relate to trade union membership are no longer likely to result in reputational loss, so long as unionisation is not required by the workplace. This is particularly true for the increasing number of workers who are employed within the 'gig economy' which moves away from the orthodox view that unionising is not just about income protection, but the defence of belief, identity, and solidarity.

This has obvious implications beyond Norway and Sweden, as it points to an EU labour market integration that once focused on materialised solidarity over working conditions being replaced by the vast usage of social media platforms and endless news streams. However, in saying such, both Sweden and Norway played an active part in founding the 1973 European Trade Union Confederation to be able to participate in social dialogue before Sweden had even joined the EU

(Kjellberg, 2000). Thus, we can apply this interaction to EU relations regarding the hopeful future that might be attained through efforts of compatibility with current labour trends to appease them to guide them towards both efficient and just relations. However, the underlying bedrock of trade unionism policy in the first half of the 20th century - the male, full-time, manufacturing industry worker on a permanent contract - has been declining at an accelerating rate since the mid-1970s (Waddington and Hoffmann, 2000). This points to the rationale for why dramatic reformation in the foundation and structure of trade unions must occur to appeal to the true and revealed population of current labour market pools.

Female Labour Relations in a Male Sphere

The challenge at the heart of labour market issues and EU integration is striking the balance of adapting to changing economic and political circumstances while ensuring influence is extended to the representation of the 'new' working groups (Waddington & Hoffmann, 2000). In many spheres of trade union leadership, women have increasingly assumed roles in the hopes of changing corporate organisation cultures to become more suited for opportunities to reform in an egalitarian manner as without such, women cannot reach their full labour market potential. Thus, labour union relations have made the encouragement, organisation, and recruitment of women a key priority for their work. The set-up of having a women's perspective from the trade union level is found to enhance the recruitment of other women. Nevertheless, women are still inadequately represented in the decision-making structure of most unions at national and European levels (Waddington and Hoffmann, 2000). This implies that a process of re-negotiating social justice differences is an ongoing struggle to adjust relative market wages and opportunities towards the benefit of the most disadvantaged groups partaking in the labour markets.

Research from Norway shows that there is a tendency to continually organise female labour relations in similar union constituencies as traditional forms (Bennett and Salvanes, 2024). This is an interesting phenomenon to account for when considering that the non-Ghent system is not enhanced by union administration of unemployment insurance and represents an "interesting counter-example to the almost universally assumed decline of trade unionism" (Dølvik, 2000: 427). Thus, reorientation in the realm of future EU labour relation integration demands desires of the increasingly feminised workforce and trade union representation. This is seen in the case of Norway where a clear majority of the elected leadership are women which has improved the image of traditionally conceived 'macho culture'. However, in the Swedish case, a paradox exists regarding high shares of gainfully employed women, 71%, but one of the highest gender-segregated workforces in the EU (Kjellberg, 2000). This is likely due to the structural barriers that remain in place regarding women's fluidity and promotion within the labour market.

Nevertheless, the household provision of care is still grossly under-recognised as the essential block of efficiency and social justice. Austerity and public-sector savings cause governments to often rule out provisions that allow for female labour mobility without the recognition that care-giving demand will not disappear alongside it, and therefore the burden must fall somewhere. Therefore, the underlying root of all EU labour integration, regardless of economic wealth, is that work in the core economy is unpaid, undervalued, exploited, and generates long-run inequalities in female opportunities for social, career, and power execution, relative to men (Gormley, 2017). However, even for those who are provided access to such environments, the declining proportion of the workforce employed in full-time contracts requires a second protective burden on EU trade unions or states, in Ghent or non-Ghent systems, to protect women facing intersectional disadvantages of being a female who is a precarious worker.

Conclusion

Labour markets are political, increasingly precarious, and often gender segregated but that does not negate the importance they hold within our socioeconomic relations. This is a great strain as they are a matter of policy that will never stagnate from being primary determinants of livelihood. Our current international relations conflicts have jeopardised any hope we have for stability or foresight in an economy that supports a balance between efficient and socially just labour relations. This adds to our understanding of the ongoing configuration in the pattern of power relations in unionisation to create conditions for development and flexible social compromise (Dølvik, 2000).

This essay has attempted to demonstrate that structural change in EU industrial relations and union structures requires a radical overhaul in policy and structure to fulfil their ability of efficiency and social justice in the impending globalised economy (Waddington and Hoffmann, 2000). From the examples of Sweden and Norway, however, we can see that interpretations of what this modernisation will need, in the nuanced details, are context-specific but can be to some degree generalised in the groupings of fundamental features, i.e. Ghent versus non-Ghent. Moreover, it begs the question of whether it will be possible to develop an effective and functioning European level of trade union representation as a complement to national systems.

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The Paradox of Automation: The Structural and Institutional Factors Shaping Wage Outcomes

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Senior Freshman

"This paper aims to examine the paradox of automation by conducting cross-country and cross-sectoral analyses to determine which institutional factors mediate the relationship between automation-driven productivity gains and wage outcomes. It employs the theoretical frameworks of Skill-Biased Technological Change (SBTC) and Routine-Biased Technological Change (RBTC) to examine the conditions under which productivity gains from automation do not necessarily translate into wage growth. Through case studies of the United States, Germany, and the United Kingdom in both manufacturing and customer service industries, it explores how institutional contexts, such as vocational training systems, collective bargaining, and retraining programs shape the effects of automation on wages and employment, highlighting the need for multifaceted policy interventions to mitigate the associated inequality risks."

Introduction

Technological change has long been recognized as a key driver of economic progress, with automation reshaping labour market dynamics and significantly accelerating productivity advancements. Classical economic models suggest that productivity growth, facilitated by technological advancement, should lead to rising wages as firms compete for increasingly efficient workers (Solow, 1957). However, empirical trends in automation-intensive industries challenge this assumption, as productivity gains have increasingly decoupled from wage growth, exacerbating income disparities (Roper, 2020). Understanding why automation-driven productivity gains fail to translate into broad-based wage growth requires a closer examination of the institutional and sectoral forces mediating this relationship. Using Skill-Biased and Routine-Biased Technological Change as theoretical frameworks, this paper employs cross-country and cross-sectoral comparisons to identify the institutional factors shaping the link between automation-driven productivity gains and wage outcomes. By integrating theoretical frameworks with empirical case studies, this analysis demonstrates the role of labour market institutions, policy decisions, and the nature of work in shaping wage outcomes in the context of automation, underscoring the need for a comprehensive policy approach to address associated inequality risks.

Theoretical Foundations: Why Productivity Gains Do Not Always Translate into Wage Growth

The standard neoclassical economic view posits that technological advancement drives higher wages by enhancing worker productivity. This stems from the principle that as firms integrate more advanced technologies, they improve productive efficiency, leading to higher output per worker and overall productivity gains. In a competitive labour market, this productivity growth should, in theory, translate into higher wages, as firms compete for increasingly productive workers by offering better compensation (Solow, 1957). However, empirical studies, particularly in the context of automation, increasingly challenge this assumption (Roper, 2020). The growing disconnect between rising productivity and stagnant wage growth can be illustrated through two dominant theoretical frameworks: Skill-Biased Technological Change (SBTC) and Routine-Biased Technological Change (RBTC). These models illuminate the mechanisms behind wage divergence, demonstrating that automation's impact is contingent on skill composition, labour market structures, and institutional responses.

Skill-Biased Technological Change (SBTC) posits that automation disproportionately benefits high-skilled workers while reducing opportunities for lower-skilled workers (Autor, Katz, & Kearney, 2008). This framework suggests that automation enhances productivity in high-skill occupations by complementing cognitive and analytical tasks, leading to wage increases in fields such as software development, finance, and engineering. Conversely, automation displaces workers in routine-intensive roles, particularly in manufacturing and clerical sectors, as machines and algorithms replace human labour at lower costs. Consequently, the labour market becomes increasingly polarized, widening wage disparities between high- and low-skilled workers.

Routine-Biased Technological Change (RBTC) provides further insight into the uneven wage effects of automation, specifically highlighting how automation contributes to the hollowing out of middle-skilled jobs, as routine, repetitive tasks are most easily automated (Goos, Manning, & Salomons, 2014). This process divides the labour market, pushing workers either into high-skilled, high-wage roles requiring advanced expertise or into low-wage, non-routine service jobs that are less susceptible to automation. For example, the rise of artificial intelligence in financial services has automated risk assessment, customer service, and investment strategies, reducing demand for traditional banking roles while increasing demand for specialized data analysts and cybersecurity experts (Frey & Osborne, 2017). This shift disproportionately benefits workers with digital skills, while those lacking them face declining job security and stagnant wages. The implications of RBTC are particularly evident in labour markets with weak reskilling mechanisms. This points to the argument that automation's effects on wages are not technologically predetermined but contingent on policy choices and institutional capacity to facilitate workforce adaptation.

Automation and Wage Divergence in Manufacturing Industries: A Case Study of the United States vs Germany

As a historically automation-intensive industry, the manufacturing sector provides a valuable empirical case for examining the relationship between technological advancement and wage divergence. The experiences of the United States and Germany, in particular, offer a comparative analysis that highlights the role of institutional frameworks, skill formation systems, and labour market policies in shaping wage outcomes amid increasing automation in manufacturing.

Automation and Wage Divergence in U.S. Manufacturing

The U.S. manufacturing sector has undergone rapid automation, with each additional industrial robot per thousand workers reducing employment in affected industries by approximately 3.3% and wages by 0.4% between 1990 and 2015 (Acemoglu & Restrepo, 2017). These displacement effects were particularly pronounced among middle-skilled, routine-task workers, such as assembly line operators and machine technicians, who traditionally formed the backbone of U.S. manufacturing employment. Since such types of jobs are primarily task-based as opposed to skill-based, automation renders them obsolete rather than complementary to new production technologies.

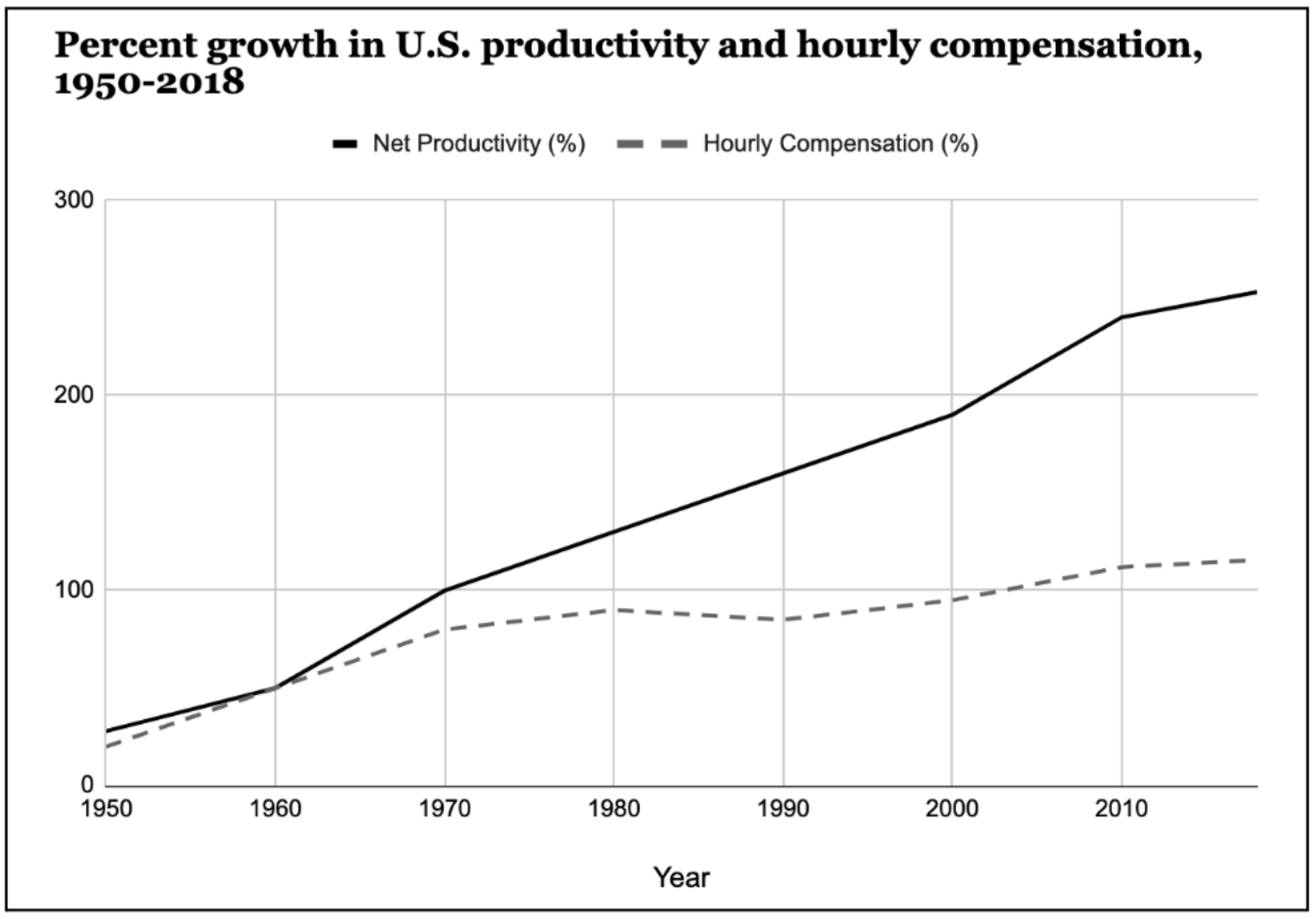

Figure 1: Percent growth in U.S. productivity and hourly compensation, 1950-2018 (Roper, 2020)

The long-term stagnation of real wages relative to productivity growth in the United States is a striking and persistent phenomenon, as highlighted by data from the World Economic Forum, displayed in *Figure 1*. Between 1950 and 2018, U.S. net productivity grew by 252.9%, while hourly compensation increased by only 115.6%, revealing a significant divergence in the distribution of economic gains. This gap suggests that the benefits of productivity growth have been disproportionately captured by capital owners and high-skilled workers, leaving median wages for manufacturing employees largely stagnant (Roper, 2020). Research by Autor, Dorn, and Hanson (2016) underscores how automation has disproportionately impacted blue-collar workers, particularly in manufacturing, exacerbating regional economic distress. Areas such as the Rust Belt, historically a core hub for industrial production, have been hardest hit by wage stagnation and rising unemployment, as automation displaced large segments of the workforce. Many displaced workers, often lacking the necessary educational qualifications or access to retraining opportunities, have been forced into low-wage service sector jobs or have exited the labour market entirely (Rotman, 2018).

A Contrasting Model of Inclusive Automation in Germany

In contrast to the U.S., Germany's manufacturing sector has experienced similarly prominent levels of automation yet managed to avoid extreme wage divergence. Germany leads Europe in industrial robot adoption, particularly in the automobile sector, where firms such as BMW and Volkswagen heavily integrate robotics into production. However, unlike in the U.S., automation has not led to significant wage stagnation or job displacement among mid-skilled workers. This resilience can be attributed to two key institutional factors: Germany's vocational training system and its collective bargaining framework.

Figure 2: Real wages and Productivity in Germany, 1999-2015 (Flassbeck, 2015)

Germany's dual education system ensures that workers acquire industry-specific, adaptable skills that complement automation rather than being replaced by it. Rather than eliminating jobs, German firms tend to retrain and redeploy workers into more technically advanced roles, allowing them to benefit from automation-driven productivity gains. For instance, assembly line workers in the automobile industry are frequently upskilled into robot maintenance and quality control positions instead of being displaced outright (Dustmann, 2014). Moreover, Germany's robust unions and collective bargaining agreements have played a pivotal role in ensuring that wage growth is more evenly distributed across skill levels. In contrast to the United States, where unionization rates have sharply declined, Germany's industry-wide wage-setting institutions facilitate workers' ability to negotiate for a share of productivity gains driven by automation (Eichhorst, 2017). *Figure 2* illustrates this dynamic, although covering a more limited time frame from 1999 to 2015, compared to the broader period presented in the U.S. case study. Despite the shorter time frame, the data suggests that both productivity and real wages in Germany experienced growth during this period. However, the divergence between these two variables has been considerably smaller in Germany, suggesting that the benefits of automation have been more equitably distributed among German workers, thereby mitigating the pronounced wage stagnation observed in the United States.

Key Findings Within the Manufacturing Industry

The contrast between the U.S. and Germany in manufacturing labour market outcomes provides compelling evidence that automation does not inevitably lead to wage divergence as its effects depend on the institutional and policy framework in which it occurs. As seen in the U.S., weak labour protections, limited retraining programs, and declining collective bargaining have allowed automation's productivity gains to accrue disproportionately to high-skilled workers, while middle-skilled workers have been displaced or pushed into lower-paying jobs. In Germany, by contrast, strong vocational training and wage-setting institutions have ensured a more equitable distribution of automation's benefits. This cross-country comparison underscores the critical role of institutional design in shaping labour market outcomes amid technological change.

Automation and Wage Dynamics in the Service Sector: A Case Study of the United Kingdom

In examining the impact of automation on wage dynamics within the service sector, a case study of the United Kingdom provides valuable insights into the contrasting effects of automation across different industries. Despite the widespread adoption of automation technologies in various sectors, their impact on wage gains, particularly in customer service, has been less pronounced than in manufacturing (Frey & Osborne, 2017). This discrepancy can be attributed to the nature of tasks within each sector, as well as to the institutional and sectoral factors that mediate the interaction between automation and labour markets.

The service sector in the United Kingdom exhibits unique characteristics that influence how automation impacts wage outcomes. Unlike manufacturing, where tasks are often repetitive and easily automated, the service sector relies heavily on human interaction and problem-solving. In industries such as retail, hospitality, and healthcare, employees are required to perform roles that involve customer relations, emotional intelligence, and adaptability which are not easily replicated by machines (Brynjolfsson & McAfee, 2014). For example, while technologies such as self-checkout machines and AI-driven customer service bots have automated specific functions, they have not replaced the need for human workers in roles requiring personalized assistance or complex decision-making (Chui and Manyika, 2016). As a result, rather than experiencing widespread job displacement, the service sector has seen a shift towards higher-skilled roles that manage and optimize the use of automated technologies. In the UK, this has led to the emergence of new job categories, such as customer experience managers and technical support specialists, whose expertise lies in integrating automation with human-centred service (Bessen, 2018). Moreover, automation in the service sector tends to complement rather than replace human labour, contributing to greater wage stability as workers transition to higher-value, skill-intensive roles. This dynamic has resulted in more moderate wage effects compared to the manufacturing sector, where automation has more directly substituted labour (Arntz, Gregory, & Zierahn, 2016). The service sector's heavy reliance on human skills and easy adaptability to automation help cushion the negative impact on wages, fostering an environment where wage growth can continue alongside technological advancement.

The difference in wage outcomes between the service and manufacturing sectors in the UK is also influenced by institutional factors. In the service sector, collective bargaining structures and worker protections have contributed to greater wage stability despite the encroachment of automation. In contrast, the manufacturing sector has seen a decline in union representation and wage negotiations, weakening workers' bargaining power and allowing automation to exert stronger downward pressure on wages (Dube, Lester and Reich, 2007). This institutional difference explains why the service sector has been able to mitigate some of the wage-dampening effects of automation, as firms in customer-facing industries are incentivized to retain skilled workers to maintain service quality.

Therefore, the case study of the United Kingdom underscores the differential impact of automation on wage outcomes across sectors, driven by both the nature of the work and the institutional context in which automation occurs. While automation in manufacturing has led to wage suppression due to labour substitution, the service sector has experienced more moderate effects, as automation complements rather than fully replaces human labour. This distinction highlights the importance of both sectoral characteristics and institutional factors when assessing the economic consequences of automation on wages.

Policy Responses: Can Automation-Driven Wage Stagnation Be Addressed?

While automation has driven significant productivity growth worldwide, its impact on wages has been highly unequal across countries, industries, and worker skill levels. This section explores potential policy interventions to mitigate the wage stagnation and inequality caused by automation, focusing on redistributive taxation, wage-setting policies, reskilling initiatives, and alternative economic models.

Redistributive Taxation

One approach to addressing automation-induced wage stagnation is redistributive taxation, in which governments tax capital-intensive firms and high-income earners to fund social programs or direct wage subsidies. Automation disproportionately benefits capital owners rather than workers, as firms replace labour with technology while retaining productivity gains as profits (Acemoglu & Restrepo, 2017). Without redistribution, this dynamic exacerbates income inequality, as wages stagnate for displaced workers while corporate profits surge. In particular, a robot tax targets firms that replace workers with automation, using the revenue to fund worker retraining or wage subsidies. South Korea implemented a reduced tax break on automation investments in 2018 to slow job displacement, and the idea of a robot tax has been proposed by policymakers such as Bill Gates. However, critics argue that such policies may discourage technological innovation and reduce competitiveness (Kang, Lee and Quach, 2024). This highlights the need for alternative taxation mechanisms, such as higher capital gains taxes or corporate profit-sharing incentives, which may be more effective in ensuring that automation benefits both workers and firms.

Strengthening Wage-Setting Mechanisms

The decoupling of wages from productivity is a key driver of wage stagnation in automation-intensive industries. Addressing this requires strengthening wage-setting institutions, including higher minimum wages, sectoral collective bargaining, and wage transparency laws. As seen in Germany and Nordic economies, coordinated wage-setting policies ensure that workers receive a fair share of productivity gains from automation. A study by Autor, Dorn, and Hanson (2016) found that in regions with higher union density, automation did not lead to as severe wage polarization as in areas with weaker bargaining power. Similarly, a meta-analysis by the OECD (2017) concluded that sectoral collective bargaining leads to more equitable wage distribution in technology-intensive industries. By strengthening union protections and expanding collective bargaining coverage, automation-induced wage stagnation may be effectively counteracted, particularly in economies such as the U.S. and U.K., where unionization has declined significantly.

Reskilling & Lifelong Learning

The ability of displaced workers to transition into higher-skilled roles is a critical factor in determining whether automation leads to wage stagnation or upward mobility. Investing in reskilling and lifelong learning programs is essential to ensuring that automation complements labour rather than replacing it. Some countries, such as Singapore, have pioneered state-supported upskilling initiatives that mitigate automation-related wage stagnation. The SkillsFuture program in Singapore has seen notable success in providing government-funded training subsidies for workers to transition into higher-skilled jobs, with a strong focus on AI, robotics, and digital skills (Lung, 2024). However, for such policies to be effective, they must be accessible and tailored to labour market needs. One of the key failures of retraining programs in countries such as the United States is that they often rely on self-funded education, which creates barriers for low-income workers (Kolodner and Butrymowicz, 2023). By contrast, publicly funded, employer-linked training models, as seen in Germany and Denmark, have been more successful in helping workers transition to better-paying jobs.

Conclusion

In accordance with the empirical and industry-specific analyses conducted, it is evident that the relationship between automation-driven productivity gains and wage growth is not technologically predetermined but shaped by institutional frameworks, labour market policies, and sectoral dynamics. While automation has exacerbated wage polarization in economies with weak labour protections and inadequate reskilling mechanisms, such as in the U.S., comparative studies from Germany and the U.K. demonstrate the effectiveness of robust collective bargaining, vocational training, and strategic policy interventions in ensuring an equitable distribution of economic gains. The divergence in wage outcomes across the manufacturing and service sectors underscores the pivotal role of both the nature of work and institutional mediation in shaping the impact of automation. To mitigate automation-induced wage stagnation, it is imperative to implement a policy framework that integrates redistributive taxation, strengthens wage-setting institutions, and fosters lifelong learning initiatives. Only through the careful coordination of these three elements can the benefits of productivity growth be equitably distributed, ensuring sustained wage growth and broader economic inclusivity.

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Economic Policy.

The Pension Conundrum: Implications of Raising the Retirement Age in Ireland

Saloni Khosla

Senior Sophister

"Ireland's public pension system faces increasing financial strain due to its aging population and a rising dependency ratio. With pension payments funded through the Social Insurance Fund via PRSI contributions from the working population, concerns arise over the system's sustainability. One proposed solution is increasing the minimum eligible retirement age (MERA) to reduce the number of retirees and alleviate tax pressures on the workforce. However, this approach has complex implications for labour supply, income distribution, private consumption, public investment, and overall welfare. While higher retirement ages may boost labour force participation among older workers and improve public finances, they also risk exacerbating income inequality, reducing savings rates, and negatively impacting the well-being of those unable to work due to health conditions. Ireland has already raised the MERA from 65 to 66, with flexibility to delay pension uptake until 70, yet further increases remain contentious. This essay evaluates the economic and social consequences of pension age reform, drawing on international evidence, and explores complementary policy measures—including broadening PRSI contributions, increasing employer and government contributions, leveraging immigration, and investing in public health—to ensure both sustainability and equity in Ireland's pension system."

Introduction

Ireland's public pension system faces mounting pressure due to its aging population. This burden falls on younger generations, the workforce, whose social insurance (PRSI) contributions fund pension payments via the Social Insurance Fund. This intergenerational transfer is economically beneficial for all parties when the contributions one makes during their working life are realised in retirement. Yet, an increasing dependency ratio, more dependents per every economically productive individual, implies that these individuals' contributions will not be sufficient to sustain the pension system (Indicator Metadata, n.d.), and this means that the contributors might not be able to enjoy the fruits of their labour upon reaching retirement age.

A potential solution is to increase the age of retirement and limit the absolute number of retirees in order to ensure tax burdens on the working population do not have to increase to sustain the system. However, this policy also has negative consequences, and remains unpopular among policymakers in Ireland who are hesitant to deliver the 'bad news'. This essay aims to analyse some implications of increasing the pension age on labour supply, income, consumption and saving habits, public funds and investment, and welfare, as well as how economic or Pareto efficiency can be maintained in the system.

In Ireland, the MERA (minimum eligible retirement age) has been increased from 65 to 66 but there is pushback from lawmakers on increasing it further (Coyle, n.d.). Greater flexibility has also been introduced into the system, with the potential to delay one's uptake of retirement, and therefore pension benefits, until the age of 70. This allows people to work longer if they wish to, in exchange for an actuarially-adjusted higher pension (Department of Social Protection, 2023).

Impact on Labour Supply

The statutory pension age is an important determinant of labour supply, and increasing the pension age has a direct effect for the employment of older people. Increased participation rates among those near retirement age can be interpreted as a strategy to earn and save more money for retirement, as well as postponing retirement due to higher expectations of longevity and income (Van Solinge and Henkens, 2010). There is supporting evidence from Japan where an increase in the retirement age from 60 to 65 has caused a 7-8 percentage point rise in employment among men (Nakazawa, 2022). However, the effect of this increased labour supply could be diminished by a decrease in youth labour supply, as seen in Italy after a 2011 pension reform. The decrease can be attributed to younger workers facing the impacts of higher firm turnover as the economy grows (Bertoni and Brunello, 2021). It is surprising to note that pension age reform has no marked effect on women's labour supply, according to the OECD (2017). Yet, there is conflicting evidence arising from the increase in pension age for women in the UK; it is estimated to have increased women's employment by 5.9 percentage points at the 60 to 61 age range (Cribb, Emmerson and Tetlow, 2014). An important caveat is that the observed effect is greater among single women compared to married women.

Effects on Income

According to Etgeton (2018), while the behavioural effects of increasing the pension age on employment are minimal, increased income inequality is observed. Consequently, labour supply effects tend to be dominated by effects on income. Findings from the Institute for Fiscal Studies in the U.K. (Cribb and O'Brien, 2022) reveal a decrease in net income of 65 year-olds after the state pension age was increased to 66, with higher incomes exclusively for those who stayed in full-time work. Additionally, significant increases in poverty for low-income households were realised (Cribb and O'Brien, 2022).

The nature of work and health conditions is also important to consider. Since the largest rise in poverty is observed among those over 65 who were not in paid work, this may reveal an inability to remain in full-time work due health conditions, and this significantly impacts low-income retirees. Consequently, the structure of pension systems contributes to income inequality during old age. According to Ebbinghaus (2021), 'Bismarckian' or 'Pay-as-you-Go' (PAYG) pension systems generate lower levels of inequality compared to a 'Beveridge' system exemplified by the UK. In the Irish context, high pension benefits have contributed to the country's economic upturn from historical poverty (OECD, 2017); this gives merit to continuing with the PAYG system even if the pension age is increased.

Effects on Private Consumption and Saving

The PAYG system is a transfer of capital from the young to the old, without resource contribution from the government. Collecting these transfers as taxes instead of creating the perception of savings can introduce distortions and reduce the private savings rates of the young (Hagemann and Nicoletti, n.d.). Pension contributions can be perceived as taxes as they usually contain the redistributionary component of taxation, along with an actuarial component. An increase in the taxation component has been shown to reduce economic activity, particularly among women (Disney, 2004).

Evidence from Italy's 1992 reform also shows a decrease in savings rates owing to reduced pension wealth. This is especially prominent amongst the middle-aged, as pension wealth is a substitute for private financial wealth (Attanasio and Brugiavini, 2003). This is supported by Etgeton et al. (2023), who found that households decided to spend more on leisure while receiving the same disposable income. These households updated their saving plans in line with the delayed retirement, perhaps due to higher expected lifetime income (Etgeton et al., 2023).

Examples from Korea's Basic Pension Scheme demonstrate higher expenditure on essential costs among poor older adults after receiving a social pension (Kang et al., 2022). This is significant as higher spending before retirement might occur because these low-income adults are not able to afford necessities prior to receiving these benefits.

Impacts on Public Finances and Investment

Increasing the state pension age also provides a boost to public finances. This occurs as more taxes are collected from the now-broader tax base and there is a reduction in pension payments distributed (Cribb and O'Brien, 2022). Evidence from the IMF reveals that increases in the retirement age have the potential to increase GDP in the short and long run, while also decreasing the debt-to-GDP ratio and simultaneously boosting investment (Karam et al., 2010).

Increased spending on pensions has shown to be detrimental for economic growth, making it an important consideration for policymakers (Maebayashi, 2013). Redirecting expenses associated with increased pension spending towards public investment could be beneficial, as this could increase productivity of the next generation, and therefore increase future social security payments collected (Hagemann and Nicoletti, n.d.). This indirectly benefits the pension system (Hagemann and Nicoletti, n.d.). Another vehicle for legislators to sustain current spending without having to increase taxation, especially during post-crisis recovery, would be to cut pension contributions (Splinter, 2017). This could be a more politically acceptable route towards increased spending or reduced deficits while appeasing working-age taxpayers.

Social Welfare Considerations

Welfare considerations are also important for enacting pension reform and adjusting the retirement age. Welfare gains arise from diminished taxation and lower capital per effective unit of labour, resulting in a lifetime income change (Makarski and Tyrowicz, 2019). Future generations stand to gain when demographic changes are accompanied by pension reform (Vogel et al., 2017).

Another important ramification of pension reforms for welfare states is the effect on the mental and physical health of people approaching the retirement threshold. Increased illness requires state provision of healthcare or disability services, creating additional financial burdens. A 2017 study has shown that being forced to stay in employment when already of ill-health can have drastic negative consequences (Demou et al., 2017). After the UK reform, these negative consequences have been evidenced in mental health studies, with impacts especially significant among women, and even stronger for those working manual-routine jobs (Carrino et al., 2018). Therefore, this negative effect is exacerbated for those from lower socioeconomic backgrounds.

Additionally, the externalities of increasing MERA on the general welfare of society should be taken into account. Under a PAYG pension system, having children creates positive externalities through expansion of the pension tax base (Amol et al., 2020). This value could decrease with increases in MERA, as the contributions needed for the pension system would be lower. The contribution of this externality to the sustainability of the PAYG system is discussed below.

Economic Efficiency

A discussion on pension policies would be lacking if it did not include considerations of economic efficiency. Andersen and Bhattacharya (2017) believe that in order for the welfare state to be effective intergenerationally, investing in public education is vital. This creates positive externalities which, when coupled with a pension system, are able to increase welfare and eventually phase out PAYG pensions (Andersen and Bhattacharya, 2017). Yet, this would have to be executed via taxation which could be potentially distortionary, as mentioned previously. A corrective or Pigouvian tax system is modelled by Peters; a full optimum in this model would be achieved by combining an 'incentive to work by eliminating over-taxation and a flat-rate pension benefit regardless of lifetime income' (Peters, 1995: 162). As proposed by Amol et al. (2020), the externality contributed by investment in education is an improvement to the PAYG system, but phasing-out of the system would actually be more efficient, according to Andersen and Bhattacharya (2017). Yet, questions surrounding possible alternatives remain; proposed options include a fully-funded system, or even no public pensions system at all.

Sustainability of the Current System

The sustainability of any pension system needs to consider fiscal sustainability complemented by 'poverty alleviation and income replacement for broad sections of society' along with an intergenerational balance (Grech, 2013: 14). Many reforms in Europe have not been able to capture all necessary conditions for sustainability and thus are still not able to guarantee the system's sustainability as populations age.

Literature on the current PAYG systems has conflicting views on its sustainability. While some state that an increasing dependency ratio is not a concern as long as parents keep investing in the education of their children, others argue that increasing the retirement age is inevitable without increasing taxation. Even then, questions arise about repeated increases in this age and to what extent that can be continued. A study on the PAYG system in a small, open economy, comparable to Ireland, with an ageing population, found that aside from the requirement for parents to keep investing in human capital formation, a pure PAYG system will not face problems regarding solvency (Stauvermann and Kumar, 2016). According to this model, the growth rate of pensions is a lot less than the growth rate of wages. An important caveat noted by the authors note is that with proportions of self-employed and freelance workers increasing, pension contributions also need to be collected from these groups. In Ireland, this has been proposed as a supplementary policy tool along with increasing the MERA (Report of the Commission on Pensions, 2021).

Issues of inequality, as discussed before, can be addressed through policies focusing on debt stabilisation. Government imposition of taxes to fund pensions, combined with an increase in retirement age could be necessary in light of an increasing dependency ratio. Increasing the retirement age can increase the sustainability of the PAYG pension system through higher production and tax revenues due to a larger labour force, and thus reduced debts (Bazzana, 2020). While MERA increases can contribute to income inequality, taxation could be a worse alternative. In this regard, a highly progressive tax, such as a wealth tax, could be beneficial. This has been proposed as a policy instrument that contributes towards funding pensions while simultaneously decreasing wealth inequality.

Improvements and Alternatives to Raising the Pension Age

Chile's 1981 reform was one of the earliest pension reforms in the West, with the country completely switching away from a PAYG system (Schmidt-Hebbel, n.d.). Schmidt-Hebbel's analysis of the reform shows that in an economy where informal labour does not contribute to the pension system, a tax-financed reform could have negative long-term effects. However, in the Chilean context, this was able to increase labour supply, saving, investment, and productivity, and thus fight poverty. Another policy lever to utilise could be increased contributions from the government, which could reduce the burden on social insurance payers and prevent their contributions from increasing. Inertia regarding making a complete switch could mean that a reform similar to Chile's might not be suitable for Ireland. Instead, some additions to the PAYG system could be considered to supplement increases in the MERA and also ensure that retirement age does not have to be increased repeatedly.

Another alternative to raising the retirement age would be to increase contributions collected from the working-age population. As discussed above, on the downside, this could have distortionary effects and also increase income inequality. Broadening the base for pay-related social insurance (PRSI) contributions, instead, through imposition on self-employed individuals could be a positive extension to the system. With the same rates of PRSI imposed on this class of workers, the distortion levels would be minimised.. An alternative could also be to motivate contributions from employers. Evidence from China shows that until a tipping point, firms are willing to pay contributions and subsequently boost revenues for the pension fund, especially when these contribution rates are kept low (Han and Meng, 2021). With the presence of many large multinational firms in Ireland enjoying tax benefits, it would become imperative after a certain point that they contribute to the country's tax system more meaningfully. Some corporation tax could be diverted to the Social Insurance Fund (SIF), perhaps as part of the Exchequer's contribution.

The Commission of Pensions in Ireland proposes a combination of these policy tools; increased PRSI contributions from the self-employed, broadening the base for PRSI collection, contributions from the Exchequer to the SIF and increasing the MERA age (Report of the Commission on Pensions, 2021). Dividing the costs across the 4 levers has significantly higher forecasted impacts and could be the ideal solution for Ireland. The additional flexibility provided by the system is also a good way to ensure that those who are in need are able to access pension funding while those who wish to continue working are also able to do so.

An alternative policy tool that could be leveraged alongside those discussed above would be to focus on health and active ageing. According to research by Mayhew, the pension age can only be increased until a certain point effectively without the need for health improvements (Mayhew, 2021). Finally, Ireland remains one of Europe's most welcoming countries for immigrants (Laurence et al., 2024) and this can be capitalized on strategically by opening up the borders to economically active immigrants.

Conclusion

While the various impacts associated with increasing a country's retirement age remain ambiguous prior to actual reforms, modelling can be based on results from countries analogous to Ireland. With the potential consequences of increasing the retirement age established, ultimately, the decision boils down to which objectives the policymakers are intending to achieve, and if the short or long term is prioritised. Implementing an increase in the retirement age aligns with the aims of a country suffering from debt or seeking to boost consumption, but less with the aims of a country that prioritises income equality and the health of older people.

Increasing the retirement age within the PAYG system in Ireland could have ambiguous effects on labour supply due to contradictory effects on the young and those nearing retirement age. Incomes could increase for those who remain in work but could have strong negative effects on those who are not able to, posing a welfare dilemma. Private consumption would be set to increase, especially on leisure, accompanied by a fall in savings rates owing to greater expected lifetime income. Public finances would be boosted as lower pension benefits would have to be paid out and the extra funding could instead be pushed into public investment and towards boosting the economy. This money could also be diverted towards public education, with additional positive externalities for the pension system. Social welfare would increase in this situation as a result of the lifetime income change and lowered effective taxes. However, effects on the physical and mental health of those near retirement age could be adverse, especially if they are forced to remain in employment. The flexibility in the current Irish pensions system aims to guard against this. According to arguments of economic efficiency, emphasis on educational investment could mean a Pareto improvement for the economy, but phasing out the system completely could be more effective. From a sustainability perspective, there is still much ambiguity.

Increasing the retirement age might prove to be inevitable for Ireland, but this should be complemented by other policy tools. Regressive taxation does not seem to be the solution; but an increased social insurance contribution base, and increased Exchequer contributions, employer contributions, corporation tax, and wealth tax, along with improved health and efficient immigration policies could be.

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HOW "WELL-ANCHORED" ARE INFLATION EXPECTATIONS?

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"Inflation expectations are crucial in shaping economic behaviour, influencing consumer spending, business investment, wage-setting, and ensuring monetary policy is effective. This paper examines how inflation expectations are "well anchored" in the U.S. and in the Eurozone, analysing the effectiveness of central banks' strategies in maintaining stability. This study explores how past inflation trends and policy credibility shape market responses by contrasting adaptive and rational expectation theories. Empirical data on inflation trends, wage growth, and breakeven inflation rates reveal key differences between the Federal Reserve's and European Central Bank's approaches to managing inflation expectations. The findings suggest that while expectations remain relatively anchored in the U.S., persistent core inflation and wage pressures present risks of unanchoring. In contrast, the Eurozone's inflation expectations exhibit greater volatility due to external shocks, such as the energy crisis, underscoring the limitations of monetary policy alone. The study advocates for enhanced central bank communication, integration of fiscal policies, and behavioural economic insights to reinforce inflation anchoring in a complex global financial landscape."

Introduction

Inflation, defined as an increase in the price level, is an important determinant of economic behaviour. Inflation expectations, with impacts on the broader economy, are crucial to its understanding. Central banks are currently grappling with managing inflationary pressure, causing inflation expectations to be a vital indicator for policymakers. Anchoring inflation expectations is essential for economic stability because it directly influences consumer spending, business investment, wage-setting behaviour, and overall market confidence. When expectations are well-anchored, inflation remains stable despite temporary shocks, as businesses and consumers trust that prices will normalise. Households and firms make financial decisions based on the belief that inflation will remain stable, preventing sudden shifts in demand or wage-price spirals. This stability fosters sustainable economic growth, ensuring inflationary shocks such as supply chain disruptions or energy price fluctuations do not lead to prolonged economic turbulence.

However, examining the cases of the U.S. and the Eurozone suggest that existing frameworks for anchoring expectations are insufficient in managing complex modern challenges, such as persistent wage pressures and geopolitical shocks. If expectations become unanchored and move away from the central bank's target, persistent inflation can ensue. This essay argues that central banks must adopt innovative, dynamic strategies to anchor expectations effectively and ensure economic stability in an evolving global economy.

Inflation expectations

Inflation expectations are shaped by how individuals and markets anticipate future price levels, and these expectations play a pivotal role in determining inflation dynamics. Two contrasting theories attempt to explain this process: adaptive expectation theory and rational expectation theory (Mlambo, 2012). Adaptive expectation theory states that the future value of the variable of interest solely depends on its past values, and suggests that individuals forecast future inflation based on past trends (Nunn and Elliott, 1975). As discussed by Milton Friedman, rising inflation leads to higher expectations, prompting businesses to increase prices and workers to demand higher wages (Friedman, 1968). For example, during the 1970s, the U.S. experienced a period of stagflation, and high inflation persisted because expectations were tied to past inflation trends (Birol, 2013). Each attempt to lower inflation failed until policymakers addressed expectations directly. In the early 1980s, once persistent inflation expectations became embedded in economic decision-making, temporary shocks, such as energy price increases, were able to trigger prolonged inflationary cycles, as businesses and workers adjusted their pricing and wage demands accordingly. This undermines economic stability by making inflation more resistant to standard monetary interventions (Birol, 2013).

In contrast to adaptive expectation theory, rational expectation theory, as stated by Robert Lucas, assumes individuals use all available information, including policy signals, to make informed forecasts about inflation (Lucas, 1986). Accordingly, if central banks maintain credible policies, individuals will trust that inflation will remain stable, even when temporary shocks occur (Sargent, 2018). This theory contributes to modern inflation targeting, where central banks aim to anchor long-term expectations around their inflation target, typically 2%. A classic example of the effectiveness of rational expectations in action is Paul Volcker's disinflation strategy in the 1980s (Goodfriend and King, 2005). Volcker implemented aggressive interest rate hikes to curb the high inflation that plagued the US economy. Despite causing a recession, Volcker's strategy succeeded in breaking inflation expectations. His approach demonstrated that credible, forward-looking policies could reshape expectations and reduce inflation persistence (Goodfriend and King, 2005). However, the assumption of perfect information and rationality among market participants is increasingly unrealistic today. For example, consumer expectations often diverge from professional forecasts, reflecting a gap between policy communication and public perception (Goodfriend and King, 2005).

The contrast between these theories reveals why anchoring inflation expectations is critical. Without stable expectations, even minor shocks can cause inflation to spiral, as seen in the energy crisis of the 1970s, where the oil crisis led to very high energy prices and fueled high inflation (ECB Europa, 2000). Rational expectations theory shows that managing inflation expectations through credible policies can stabilise inflation, limiting the economic damage caused by temporary disruptions. This insight is particularly relevant in a post-pandemic world, where central banks must manage public expectations amid uncertainties such as wage pressures, tight labour markets, and rising geopolitical risks.

One can look at the Phillips curve framework to further examine how expectations impact inflation behaviour. The Phillips Curve illustrates the trade-off between unemployment and inflation in the short run, but this trade-off shifts when inflation expectations change (Corbett, 2025). When expectations rise, workers demand higher wages, and firms increase prices, pushing inflation higher even if unemployment remains elevated. The diagram below (*Figure 1*) illustrates this.

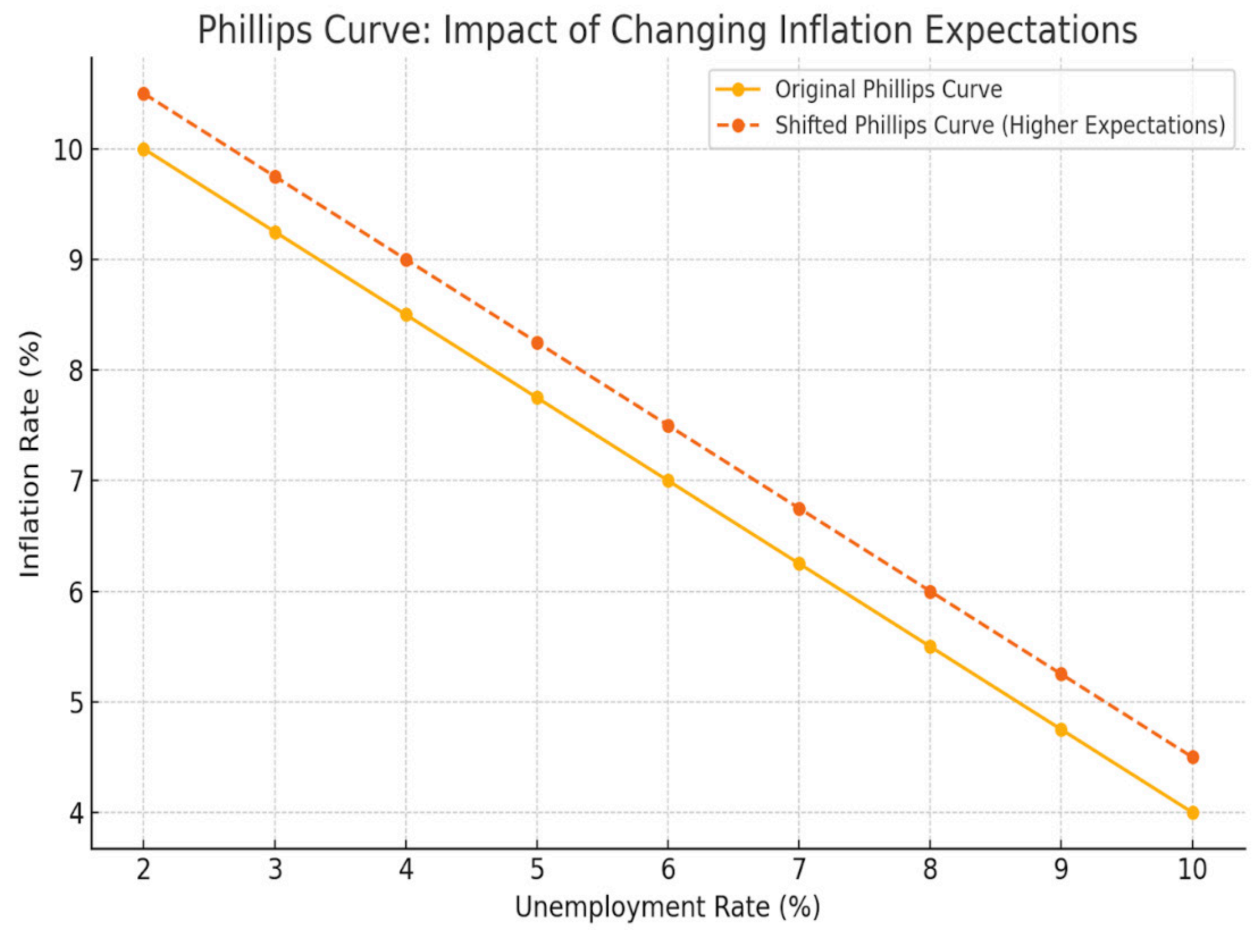

Figure 1: Phillips curve

The solid curve represents the original Phillips Curve, illustrating the inverse relationship between inflation and unemployment. The dashed curve shows the shifted Phillips Curve, reflecting the impact of increased inflation expectations which drive wages and prices upward, and leading to higher inflation even at the same unemployment levels. This phenomenon is evident in recent U.S. events, where rising wages and heightened inflation expectations have complicated monetary policy. Inflation has remained high despite low unemployment, compelling the Federal Reserve to maintain tight monetary policy. However, the weaker applicability of the traditional Phillips Curve, post-2021, to inflationary data underscores the evolving nature of inflation dynamics (Smith et al., 2024). This shift highlights the critical role of anchoring inflation expectations to ensure stability.

The EU vs the U.S: Key Insights

To understand the extent to which inflation expectations are well-anchored, contrasting EU and U.S. responses to battling inflation provides key insights.

(a) US Inflation and Federal Reserve Policy

In the US, Consumer Price Index inflation slowed to 2.4% in September 2024, signalling progress toward achieving price stability, but core inflation remained elevated at 3.3% (Cox, 2024). This persistent core inflation reflects wage growth pressures despite easing labour market conditions, complicating the Federal Reserve's task of guiding inflation expectations. Although the 10-year breakeven inflation rate rose modestly to 2.5%, it remains close to the Fed's target, indicating that long-term inflation expectations remain anchored (St. Louis FED., 2024). This stability aligns with rational expectations theory, where markets adjust expectations based on credible policy actions, trusting that inflation will return to target levels. This phenomenon highlights the limitations of monetary policy alone in managing inflation expectations.

(b) Eurozone Inflation and ECB Policy

In the Eurozone, inflation fell to 1.8% in September 2024, but weak economic growth poses significant risks (Vadim, 2024). Unlike the US, where labour market dynamics complicate inflation, the ECB must navigate volatile energy prices and external shocks, such as the energy crisis caused by Russia's invasion of Ukraine (Lahiri, 2024). The temporary unanchoring of expectations during the Eurozone's crisis exposed the fragility of adaptive behaviours in the face of geopolitical risks (Vadim, 2024). The ECB's lack of coordinated fiscal measures during this period caused inflation expectations to become temporarily unanchored. This illustrates the need for complementary tools beyond interest rate adjustments. The divergence in inflation trends between the two regions highlights that region-specific factors, such as energy market dependencies, can shape inflation expectations (Lahiri, 2024). This variability reflects the influence of adaptive expectations, as the Eurozone's inflation dynamics are more vulnerable to external disruptions than the US (Beechey, Johannsen and Levin, 2008).

(c) Anchoring inflation expectations: EU and U.S.

Both these regions have taken significant strides to anchor inflation expectations, but have had variable successes due to distinct challenges. Long-term expectations remain anchored in the US, as seen by breakeven inflation rates. However, persistent wage growth and core inflation suggest a growing risk of adaptive behaviour, where inflation expectations might drift if wage pressures continue unchecked. The Phillips Curve's weakening predictive power post-2021 further complicates the task of anchoring expectations, as inflation persists even with some easing in the labour market. Meanwhile, inflation expectations have shown greater volatility in the Eurozone due to energy shocks. While inflation is falling, the temporary unanchoring of expectations during the Russia-Ukraine conflict reveals the vulnerability of adaptive expectations in the face of external disruptions. This makes it harder for the European Central Bank (ECB) to anchor expectations solely through monetary policy, necessitating the use of fiscal tools such as subsidies or energy price caps to stabilise prices and reinforce expectations.

To build upon this, the Federal Reserve's projections and data from the Survey of Professional Forecasters (SPF) can be used to explain the complexity of managing expectations further. The Fed's forecasts reflect optimism that inflation will quickly return to its 2% target, aligning with its forward-looking, policy-driven approach (Federal Reserve, 2024). In contrast, SPF forecasts have been more cautious, accounting for persistent labour market pressures and wage growth. The difference between them suggests that consumers outside the central banks look at multiple different avenues of risk factors when forming inflation expectations. To prove this point, the University of Michigan conducted a study on "Whose Inflation Expectations Best Predict Inflation?", resulting in consumers often showing higher inflation expectations than professional forecasters such as the Survey of Professional Forecasters (Verbrugge and Zaman, 2021). For instance, consumer expectations for one-year-ahead inflation have recently ranged from 2.5% to 4.7%, while professional forecasts have been more conservative, reflecting a more cautious outlook based on economic fundamentals (Verbrugge and Zaman, 2021). The tendency of consumers to expect higher inflation than professional forecasters further complicates the anchoring process. This suggests that public inflation expectations are more volatile, shaped by recent price trends and market uncertainty, posing challenges for central banks in managing long-term inflation expectations.

In the Eurozone, a similar pattern emerges. The latest findings from the ECB Survey of Professional Forecasters (SPF) for 2024 show that headline inflation is expected to average 2.4%, with downward revisions to 1.9% for 2025 and 2026 (European Central Bank, 2024a)

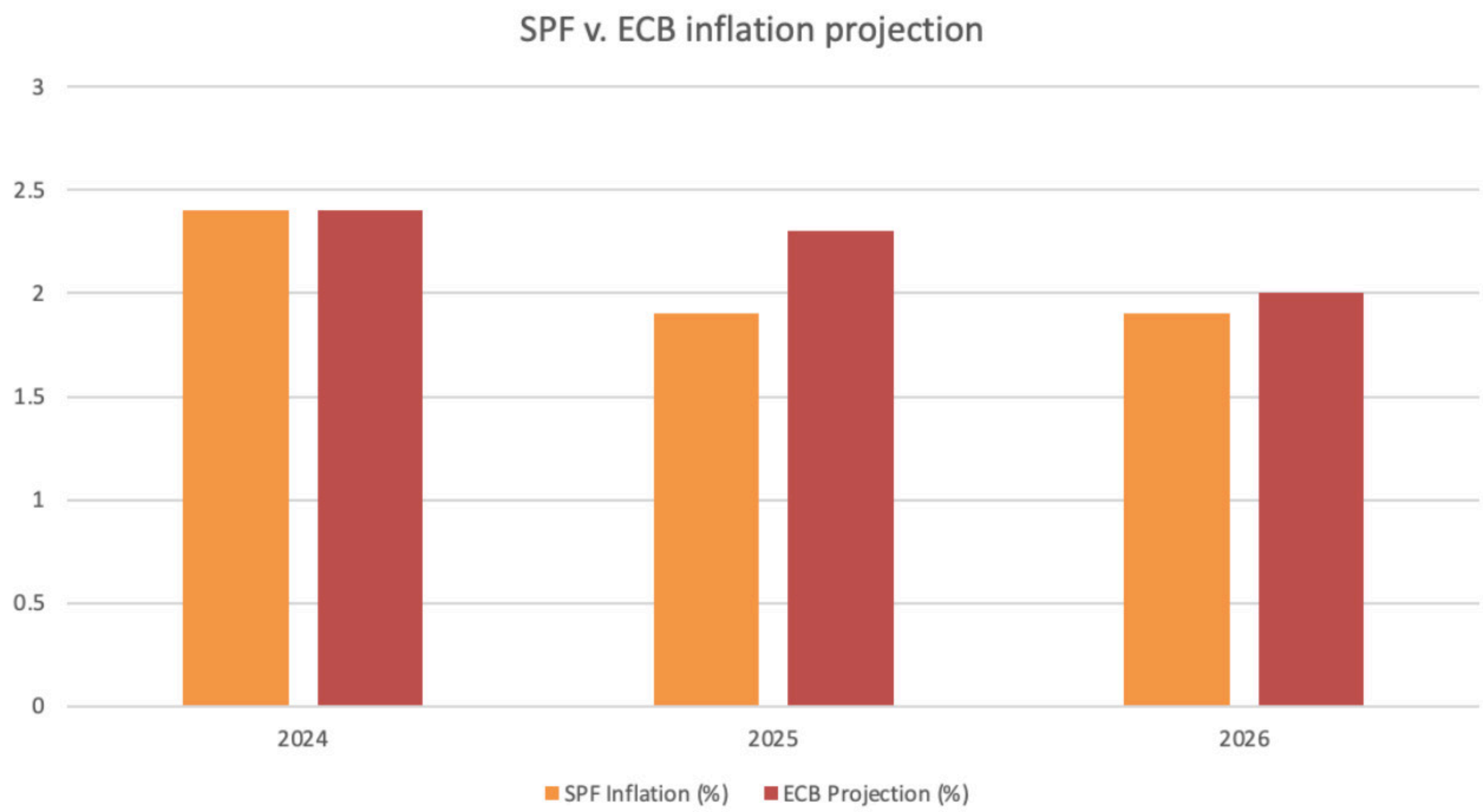

Figure 2: Inflation Expectations

In comparison with the FED forecasts, the ECB's projections anticipate a more gradual return to the 2% target, forecasting an average inflation rate of 2.3% for 2025 and stabilisation at target levels by the end of that year (European Central Bank, 2024b). The divergence between the SPF and ECB projections highlights differences in assessing economic risks. While the ECB takes a gradual, policy-driven view, the SPF reflects a broader range of risk factors, including wage growth and labour market pressures, leading to quicker revisions toward lower inflation expectations. Again, this shows how external forecasts or consumers look at other factors compared to central banks. Particularly in the Eurozone, energy market volatility impacts inflation forecasts. During the energy crisis, actual inflation outcomes aligned more closely with professional forecasts than ECB projections, demonstrating the limitations of traditional central bank forecasting during periods of external disruption. This aligns with adaptive expectations theory, where market participants adjust forecasts based on recent economic shocks, even when central banks project smoother inflation trajectories. Moreover, the influence of external shocks, like the energy crisis, reveals the limitations of traditional central bank forecasting in anchoring inflation expectations. Contrasted with the ECB's more stable projections, the adaptive responses from external forecasters suggest that inflation expectations are vulnerable to sudden disruptions, challenging the central bank's ability to maintain stability.

As seen from both adaptive and rational expectations theories, anchoring inflation expectations is essential for economic stability, but achieving this is not straightforward for policymakers. Rational expectation theory can be applied here because central banks must maintain clear communication and forward guidance to market behaviour and public sentiment, reinforcing the idea that inflation will return to target levels. For example, the FED 2% target is an anchor, signalling market stability. However, adaptive expectations theory shows that when recent inflation trends persist expectations may shift based on past inflation patterns, complicating monetary policy efforts. Additionally, policymakers face a trade-off. Raising interest rates to combat inflation can slow economic growth, risking recession, as seen during Paul Volcker's disinflation strategy (Goodfriend and King, 2005). In today's context, policymakers aim to fine-tune monetary policy to control inflation without undermining economic growth. The challenge grows further with geopolitical risks and supply-side shocks. The Russia-Ukraine conflict disrupted energy markets, leading to temporarily unanchored expectations in the Eurozone. This demonstrates how external shocks can weaken central banks' ability to manage inflation expectations through monetary policy alone, revealing the limitations of monetary policy alone. This aligns with adaptive expectations theory, suggesting that people adjust forecasts based on recent events, such as energy crises. Fiscal politics have become crucial as governments can implement subsidies or energy price caps to reduce inflationary pressures and complement central bank efforts, preventing expectations from drifting into adaptive behaviour.

The Phillips framework can be applied to the U.S. economy. When inflation expectations become unanchored, workers demand higher wages, and businesses raise prices to cover increased costs, creating a wage-price spiral. This phenomenon is particularly evident in the US, where persistent wage growth, despite low unemployment, complicates the Federal Reserve's task of stabilising inflation expectations (Haschka and Rouven, 2024). This aligns with adaptive expectations theory, as rising wages and inflation reinforce each other, causing higher inflation that is difficult to control through monetary policy alone. Thus, anchoring inflation expectations requires more than just interest rate adjustments. It demands clear communication, careful management of wage pressures, responsiveness to geopolitical risks, and coordination between fiscal and monetary policy. Central banks must navigate these complexities to maintain public trust, prevent inflationary spirals, and ensure long-term economic stability.

Proposals for Strengthening Anchoring Mechanisms

One key strategy for strengthening the anchoring of inflation expectations is enhancing central bank communication frameworks. By bridging the gap between professional forecasters and public perception, central banks can reduce misunderstandings and mitigate public overreaction to temporary price shocks. Simplified and transparent messages, tailored to diverse stakeholders, are essential. For instance, targeted campaigns through social media or interactive dashboards that explain inflation targeting goals in accessible terms could significantly improve public understanding and trust in monetary policies.

Another critical approach involves the integration of fiscal and monetary policy to address the limitations of relying solely on interest rate adjustments. Geopolitical shocks, such as the Eurozone energy crisis, have demonstrated the need for coordinated fiscal tools to complement monetary efforts. Fiscal interventions, such as energy subsidies or price caps, can help stabilize inflation expectations during periods of external volatility. For example, France's implementation of price caps during the energy crisis led to less inflation expectation volatility than other Eurozone countries that relied primarily on monetary tightening (ECB Europa, 2000).

Finally, incorporating behavioural economics into policy design offers a powerful way to enhance public engagement and manage inflation expectations. Understanding psychological drivers, such as loss aversion and risk perception, enables central banks to craft narratives that resonate with the public and align with policy objectives. By addressing these behavioural factors, central banks can foster greater trust and compliance with inflation management strategies, creating a more stable economic environment.

Conclusion

In conclusion, anchoring inflation expectations is crucial for maintaining economic stability by influencing how individuals, businesses, and markets respond to temporary shocks and price changes. The U.S. and the Eurozone face unique challenges in managing inflation expectations shaped by regional dynamics and external shocks. The Federal Reserve's policies reflect rational expectations, with core inflation posing risks if wage growth persists. Meanwhile, the Eurozone's reliance on volatile energy markets has demonstrated the susceptibility of expectations to adaptive behaviour, particularly during geopolitical disruptions. Future research should focus on refining monetary policy tools that can better accommodate the uncertainties of modern economies, particularly in the wake of geopolitical shocks and supply-side disruptions. Studying the effectiveness of unconventional policy tools such as forward guidance strategies, inflation-linked fiscal interventions, and behavioural economic insights could help central banks design more robust frameworks for expectation management. Ultimately, as inflation dynamics evolve in response to technological advancements, labour market shifts, and global uncertainties, central banks must remain adaptable, transparent, and proactive in shaping expectations. A combination of precise communication strategies, forward-looking policies, and interdisciplinary research will ensure inflation expectations remain well-anchored in the long term.

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The High-Stakes Gamble of Demonetisation – Evidence From India

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"This essay examines the policy gamble of India's 2016 demonetisation, which aimed to eliminate illicit financial flows and promote a digital economy. Through the lenses of Game Theory, Monetarist perspectives, and Keynesian economics, the essay dissects the policy's economic failures. It argues that the short-comings resulted not only from flawed execution but also from a fundamental disconnect between economic behaviour and public trust in the government. By exploring the role of aligned incentives, trust-building, and equitable cost-benefit distribution, the essay rethinks the foundations of effective policy implementation".

Introduction

Demonetisation is one of the most high-stakes policy gambles in modern history. It is the process of stripping a currency unit of its status as legal tender for reasons such as eliminating the "black economy" (Tax Research Team, 2016). India's sweeping 2016 initiative illustrates how a policy aiming for an ambitious reform can falter due to insufficient planning, inadequate execution, and unintended consequences. This bold policy caused major financial disruption throughout the country. Demonetisation exposed the fragility of India's financial system highlighting the importance of public trust in monetary reforms.

This paper analyses the key economic failures of India's demonetisation by applying game theory, Monetarist perspectives, and Keynesian economics. A keen focus is given to how inefficient institutions, trust deficits, and misaligned incentives undermined the policy's objectives. A game-theoretic approach helps explain the interactions between players by illustrating coordination failures. Monetarist perspectives examine the contraction of the money supply and its impacts on the Reserve Bank of India. Finally, Keynesian ideas, like liquidity preference (Fantacci, 2016), shed light on the broader economic disruptions. Ultimately, this paper argues that the failure of India's demonetisation lies not in its flawed execution, but rather due to misunderstandings of the relationship between economic behaviour and public trust. It is a reminder that policies fail when they clash with human incentives and systemic fragilities.

Overview of Indian Demonetisation

On November 8, 2016, Indian Prime Minister Narendra Modi announced that all 500 and 1000 rupee notes, constituting 86% of the nation's currency in circulation, would no longer be legal tender (Chanda and Cook, 2022). As cash plays a significant role in the Indian economy, the government's rationale for targeting high denomination notes was to reduce cash crimes. The policy aimed to cut terrorism financing, reduce corruption, eliminate counterfeit notes, and set the foundations for a cashless economy (Patil, 2016). New 500 and 2000 rupee notes were introduced to quickly refill the amount of currency in circulation (Mollan, 2023). Although the new 2000 rupee notes arrived at banks quickly, there existed logistical issues which delayed the rollout of 500 rupee notes (Adhikari, 2016). Therefore, the abrupt move caused widespread financial disruption as people struggled to meet daily needs. However, 99% of the invalidated currency had returned to the banks, failing to eliminate black money from circulation (Chanda and Cook, 2022).

The opposition party INC claimed that a key reason for this failure is that black money is typically not stored in cash form but rather as real estate, bullion, or other forms of easily convertible currency (Indian National Congress, 2024). As the demonetisation policy targeted mainly cash hoarders, most of the black money continued to reside in circulation, nearly doubling from 17 trillion rupees in 2016 to 34 trillion rupees in 2024 (Chadha, 2024). Famous economist Amartya Sen called the demonetisation a "despotic action" as it "undermines the entire economy of trust" (PTI, 2016). Sen's reaction highlights the economic hardship inflicted on the poor and the avoidance of resolutions to systemic issues of corruption and tax evasion. Former Indian Prime Minister Manmohan Singh was also critical of the policy calling it "organised loot and legalised plunder" (Haidar and Singh, 2016). Singh argued that targeting cash alone will not curb illicit financial practices and suggested simplifying tax systems instead (DH Web Desk, 2024). Lacking financial infrastructure, clear policies and public trust, India failed to manage the transition effectively.

Game Theory of Coordination Failures

Black Market Economy

The application of game theory to analyse demonetisation in India unveils the complex strategies of governments, businesses, and citizens. From one angle, Indian demonetisation can be seen as a coordination game between the government and black-market operators. The dominant strategy of the government was to curb the circulation of black money. This was done by pushing the Indian population to deposit their cash into formal channels like banks. Conversely, the dominant strategy of black-market operators was to evade the policy through illegal exchanges and continue their operations without detection. The policy inevitably failed to achieve a socially optimal Nash equilibrium. The RBI's 2017 Annual report on demonetisation illustrates that only 1 percent of demonetised cash, amounting to 160 million rupees, did not re-enter the banking system (Nataraj, 2017). Therefore, black-market operators continued to avoid economic formalisation. A socially optimal Nash equilibrium would have enabled the government to drive money into the formal economy while allowing black market operators to transition into legitimate operations.

For a socially optimal Nash equilibrium to be reached, the government could have approached policy design differently. The objectives of demonetisation could have succeeded had the government employed stronger incentives to transition into the formal economy. For instance, tax amnesties may have allowed black-market operators to enter the formal economy without many penalties. The success story of Indonesia's tax amnesty program supports this view. The Indonesian government successfully uncovered 300 million dollars of assets in its first tax amnesty program in 2016 followed by 600 million dollars in the second program in 2022 (Reuters, 2022). Indonesia's success is particularly noteworthy for India as they improved compliance where tax evasion accounted for more than half of the workforce (Reuters, 2022). However, the success of such initiatives is dependent on the strength of enforcement and public trust in the government. Weak government enforcement can encourage the black-market economy to thrive, because if the public believes government actions are inefficient, they may be unwilling to comply with government objectives. To avoid this, the government must build trust with the public. Hence, an ideal outcome would involve the government effectively communicating its objectives and imposing strict penalties on illegal activities.

Cashless System

From another angle, the government initiated a coordination game where everyone had to align their strategies to a new cashless system. The government's dominant strategy was to encourage a shift toward digital payments and drive financial inclusion. However, widespread digital adoption was unattainable. The dominant strategy of the urban population was to capitalise on better access to technology. Mobile banking transactions rose twentyfold within three years of demonetisation and Paytm users increased by 29% to 282 million within a year (Bajpai, Biberman and Sachs, 2018). Nonetheless, the implementation resulted in coordination failures due to a lack of digital infrastructure in rural areas. These failures exacerbated economic inequality. Studies conducted in December 2016 found that rural regions, home to 68% of the Indian population, only had 16% connectivity as opposed to 56% for urban and metropolitan areas (Fouillet, Guérin and Servet, 2021). As of December 2016, more than 93% of India's rural population had never gone through with a digital transaction (Rajiv Singh, 2016). Hence, the dominant strategy of rural workers was influenced by status quo bias (Samuelson & Zeckhauser, 1988); they hoarded cash and delayed digital adoption. Academics such as Douglas Gale (1995), argue that "in an equilibrium, it may be optimal for an individual to delay". However, he highlights that there is in fact "no social gain from delay". Therefore, we can contend that the outcome was far from socially optimal. The divergence illuminated the payoff disparity: the urban population benefitted from the digital push, while cash-dependent businesses suffered from economic distress.

In response to these coordination failures, the Indian government promoted the Unified Payments Interface (UPI) scheme with the hope of increasing digital adoption. Initially, UPI garnered success in rural areas due to its simplicity and low transaction costs (Swaminathan, 2023). However, the success was short-lived in rural regions such as Karnataka and Maharashtra. A survey conducted by 1Bridge concluded that only 3-7% of those who lived in these rural regions were consistent with UPI usage while 40% of those surveyed were unaware of UPI (Chakraborty and George, 2023). This was due to several factors such as reliance on short-term incentives, limited digital literacy, and poor infrastructure in rural areas (Sato, 2024). Once the initial benefits of digitalisation faded, many users reverted to cash transactions. According to the Reserve Bank of India (RBI), cash circulation grew by over 16.6% in the fiscal year 2020-21 alone (Biswas, 2023). To ensure lasting success, the government needed to provide long-term incentives. Financial inclusion schemes for consistent UPI use would have made digital payments more attractive in the long run. The success story of Kenya's M-Pesa mobile payments provides numerous lessons for the Indian government. Efficient collaboration of service providers and the Kenyan Central Bank saw a significant rise in financial inclusion. The rise reached 84% in 2021 from 26% in 2006 (Liu, 2024). Nonetheless, while initiatives like UPI seemed promising, their long-term success was hindered in rural areas due to coordination failures and a lack of sustained incentives. Hence, the government needs to build public trust in digital systems by ensuring that the benefits of digitalisation are equitably distributed across both urban and rural populations.

Economic Impacts of Demonetisation

Monetarist Perspective

From a monetarist perspective, demonetisation contracted India's money supply. The total circulating currency dropped sharply from a pre-demonetisation peak of 15 billion rupees to a post-demonetisation trough of 7 billion rupees (Subramaniam, 2019). Monetarists argue that the velocity of money is stable (Bilgili and Faik, 2001). However, India's demonetisation contradicts this assumption as the RBI saw a surge in liabilities resulting from bank deposits increasing by 4.0-4.7 percentage points in the demonetisation period (PTI, 2017). As the deposited money was not actively circulating in the economy, the Monetarist expositions are unsatisfactory, and we can imply a decrease in the velocity of money. We can counteract Monetarists' claims stating that 'V is independent of change in money, gradual, and anticipated' (Bilgili and Faik, 2001). To resolve the reduction in velocity and thus increase liquidity, the RBI engaged in open market operations such as reverse repos (Kattoor, 2017). These acts of economic desperation demonstrate the critical role of monetary policy in stabilising liquidity.

Nonetheless, the RBI could have controlled the velocity and contraction of the money supply by implementing a phased rollout of demonetisation. History shows markable examples like the phased introduction of the Euro. The transition of legal tender began in 1999 with a basic electronic introduction, leading to eventual cash introduction on 1 January 2002 followed by a gradual expansion to other Euro-zone members (European Central Bank, 2023). The success of the Euro's introduction lies in its smooth transition, economic stability, and public trust. Instead of withdrawing 86% of India's currency overnight, the invalidations could have taken place in stages to ensure liquidity. Critics also debate against the necessity of demonetisation, as studies show that only 6% of the illicit wealth was in the form of cash anyway (BBC, 2017). An approach that considers money velocity instability could have avoided economic disruption while achieving policy objectives.

Keynesian Perspective

In contrast to Monetarists, Keynesians argue that velocity is subject to change (Bilgili and Faik, 2001). Concerning the velocity of money, we can apply Keynesian theory to examine the implications of demonetisation on demand shocks and consumption patterns. From a Keynesian perspective, demonetisation disrupted aggregate demand in India due to changes in velocity, thereby altering consumption patterns. Demonetisation created a liquidity crisis that reduced economic activity by 3 percentage points between November and December 2016 (Belsie, 2019). According to Keynesian theory, declining liquidity limits consumption, which in turn reduces aggregate demand. Surveys following demonetisation revealed that 35% of respondents postponed spending (Mishra, 2018), reflecting a decrease in the marginal propensity to consume. With consumption falling by 20% (Wadhwa, 2020), the negative multiplier effect intensified, amplifying the slowdown. This downturn especially affected small and medium-sized enterprises, with layoffs of 3% and 7% (Subramaniam, 2019). The negative effect aligns with Keynesian theory, emphasising the central role of aggregate demand in driving economic activity as sudden liquidity shocks can trigger a broader economic slowdown.

Keynesian theory can also help identify ways in which the government could have dealt with this economic crisis better. Keynesians advocate for government intervention to stimulate demand during an economic slowdown (Jahan, Saber Mahmud and Papageorgiou, 2014). Studies show that the introduction of Unconditional Cash Transfers (UCTS) in Kenyan households led to increases in both consumption and savings (Haushofer and Shapiro, 2016). The Indian government could have introduced short-term fiscal stimulus measures like direct cash transfers to low-income households and encourage household consumption. If implemented effectively, the policy could reinforce the Keynesian multiplier effect; Stimulating consumption creates a ripple effect in the entire economy. However, a lack of public trust can reduce the efficacy of both fiscal and monetary policies. To address this, the government must prioritise transparency and engage with all stakeholders to rebuild confidence. In Keynesian theory, public trust is essential as confidence in the economy is what drives consumption and investment (Morgan and Sheehan, 2015).

Conclusion: A More Effective Strategy

In conclusion, demonetisation should not be a standalone policy but a catalyst for broader economic change. It requires synchronised efforts in monetary and fiscal areas. Game theory reveals that successful demonetisation hinges on creating a system that aligns the incentives of everyone. Hence, the government could have created stronger incentives for formalising transactions, giving less incentive for black-market operators to thrive. A smoother transition to digital transactions could have aligned the interests of citizens with the government's goals. From our analysis, we discovered that Keynesian views subdued Monetarist views when examining the impact on the velocity of money. Hence, a particular focus on fiscal policy over monetary measures could have alleviated the unintended consequences. Monetarists argue that a phased demonetisation could have been more effective in maintaining liquidity. Regardless, Keynesians contend that income shocks could have been reduced through effective fiscal stimulus measures for the poor.

Such alternatives underscore that sustainable demonetisation demands a commitment to equity and trust-building. Governments must ensure that the costs and benefits are shared transparently and fairly among all. Thus, the lesson of demonetisation lies in its paradox: its success does not depend on addressing economic problems like black money, but on creating an environment where compliance is seen as a collective investment in the future. For policymakers, this means that monetary policy must be as much about rebuilding the social contract as about managing liquidity. In the end, the high-stakes gamble of demonetisation proves that when trust is lost, the cost of change can be too great to bear.

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Applied Economics.

Wage Responses to Tax Policy: Tax Individualisation in Ireland and its Impact on Married Women's Earnings

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"This paper exploits a 2000 policy in Ireland implementing partial tax individualisation for married couples to estimate how the reform impacted female earnings. By executing a two-period differences-in-differences technique with two-way fixed effects, this paper illustrates that the reform caused an increase in married women's incomes of between five and eight per cent. The findings of this paper enhance existing knowledge of welfare reforms and their effects on female earnings, whilst having important implications for fiscal policies which aim to enhance female financial autonomy and decrease income inequality between spouses."

Introduction

Arguably one of the most pronounced changes to western societies over the past fifty years has been the evolving role of women in relation to paid employment (Russell, McGinnity and O'Connell, 2017, p.393), with societies seeing an increase in married women entering the labour market (Smith et al., 2003, p.417). Income taxation can heavily influence labour supply decisions (Bick and Fuchs-Schündeln, 2017), and previous empirical research has primarily focused on how policy reforms towards joint or individual taxation alters female labour force participation. However few papers have discussed how such a fiscal shift impacts the income of married women, despite many feminists having long since established an objective of equality within marriage through the wife's right to control her own income and financial independence (Sainsbury, 1999, p.185). Moreover, evidence suggests that earned income, such as wages, could be more important than unearned income, such as cash transfers, to empower women (Anderson and Eswaran, 2009), and greater female control over household resources is seen to amplify a country's growth prospects by altering spending patterns in ways that benefit children (World Bank, 2011). Establishing equality of earned income between spouses may therefore be seen as an explicit policy goal in itself. To approach that goal, and to increase female autonomy and consumption capacity, it is important for policymakers to quantify the wage responsiveness of women to such tax individualisation reforms.

This paper uses a two-period differences-in-differences approach with two-way fixed effects to examine how the Irish reform in 2000 towards partial tax individualisation for spouses altered the earned income of married women. The results suggest that the tax reform increased the net weekly wages of married women of between 5-8%, thereby providing women greater financial freedom and independence. These findings enhance existing knowledge of welfare reforms and provide novel insights into how female incomes adjust to taxation policies in Ireland's context. The paper is organised as follows: Section One provides an overview of tax individualisation and a literature review. Sections Two and Three describe the dataset and the empirical approach applied to estimate the causal effect of this reform. The results and some robustness checks are presented in Section Four, and Section Five concludes with implications for future research and policies.

Section One: Background and literature review

The employment rate of Irish women has seen an increasing trend in recent decades, however female labour force participation rates in Ireland remain consistently low compared to their male counterparts (Central Statistics Office, 2022) and particularly low compared to other European countries (Doorley, 2018, p.72). As a result, Irish women are less likely to receive earned market income than other women in the EU (Doorley, 2018, p.73). However, income tax systems can influence the labour market outcome of married women through the employment of joint or individual taxation (Bick and Fuchs-Schündeln, 2017, p.100). In a system of joint taxation, the income of a married couple is aggregated to determine the tax liability (Islam et al., p.2). This system, however, imposes large marginal tax rates on the secondary earner in a couple, which is typically the woman (Doorley, 2018, p.72), thereby providing a disincentive to work. Conversely, for systems of individual taxation, the individual is assessed in isolation; each person is taxed on their own labour earnings, irrespective of their marital status (Maier, 2023, p.4). For Ireland, Budget 2000 partly individualised the income taxation system for spouses (Russell, McGinnity and O'Connell, 2017, p.406), which reduced the extent to which married couples could transfer their standard rate tax bands compared to the joint taxation system which was in place before the reform (Russell, McGinnity and O'Connell, 2017; Doorley, 2018, p.74; ESRI, 2018). Notably, it was intended that a system of full individualisation would be implemented over the following two budgets, although due to public outcry, a system of full individualisation was never established. As a result, the current system in place is a hybrid between the older joint taxation system and the envisaged policy of full individualisation (Byrne, n.d.). This paper empirically estimates the extent to which the policy in 2000 affected female labour market earnings in Ireland.

The literature on tax individualisation employs both discrete choice models and quasi-experimental approaches to examine female labour supply responses to such a policy. Studies which use discrete choice models find that the labour force participation of married women would increase with the introduction of full tax individualisation, such as in Ireland (Callan, van Soest and Walsh, 2007), France (Kabátek, van Soest and Stancanelli, 2014), Germany (Decoster and Haan, 2011) and Luxembourg (Islam, Doorley and Flood, 2020). Conversely, a hypothetical move from individual to joint income taxation is seen to decrease the labour force participation rate of married women if the husbands' labour supply is inelastic (Colonna and Marcassa, 2015, p.21). Additionally, several studies have examined the labour market impacts of policy reforms from joint to individual taxation using differences-in-differences approaches, including Eissa (1995), Crossley and Jeon (2007), Selin (2014), Roantree (2018) and Fuenmayor, Granell and Mediavilla (2018). All estimates find that reforms towards individualisation substantially increased the labour force participation and incomes of married women, particularly for wives of high-income men. On the contrary, joint taxation has been shown to decrease the labour force participation rate of married women but has little effect on the labour supply behaviours of married men, which was highlighted by Lalumia (2008) in the United States and Kalíšková (2014) in the Czech Republic.

Given what is known in the literature about the labour market response of married women to this policy, one would expect that the reform in 2000 would increase married women's incomes in Ireland. This paper evaluates this effect and adds to the existing literature on tax individualisation policies, whilst building on previous research for Ireland which found that the reform increased the employment rate and hours worked for married women, and decreased their hours of unpaid childcare (Doorley, 2018). However, this paper is different from the existing literature in a number of ways. Firstly, income, rather than explicit labour force participation is examined, quantifying the increase in female financial autonomy and female consumption capacity provided by the reform. This explicitly estimates how the policy affected the capacity of women to influence decisions within the household relative to their husbands' due to earnings dynamics (Anderson and Eswaran, 2009, p.179). Secondly, in comparison to previous literature on tax individualisation, several control groups are considered, and event studies are used to verify the assumption of parallel trends between treatment and control groups, an approach recommended by Roth et al. (2023). Existing papers have been criticised for potential violations of this assumption for differences-in-differences estimates (Blundell and Macurdy, 1999, p.1615), however the strong evidence in favour of parallel trends obtained in this paper provides enhanced validity to the causal inference of the regression.

Section Two: Description of the dataset

This paper utilises the 'Living in Ireland' survey, which formed the Irish component of the European Community Household Panel (ECHP) (Watson, 2004). This was an EU-wide project coordinated by Eurostat and conducted harmonised cross-sectional surveys each year in eight waves between 1994 and 2001, as well as providing longitudinal data, which assessed the social situation, financial circumstances and living standards of individuals living in Europe (Watson, 2004). The individual and register files for each year were used for this analysis, which allowed for six years of data before the policy treatment and two years after. Although the same set of households and individuals were followed over time, the dataset suffers from attrition, leading to an unbalanced panel. This should not pose a problem so long as the attrition was random and the sample size remained relatively large, as otherwise there may be a loss of representativeness in the remaining sample (Watson, 2004). To address this concern, 1500 new households were added to the survey during the seventh wave in 2000 to supplement the sample of Irish individuals from Wave One (Watson, 2004), which ensures a high level of precision of estimates of key figures (Watson, 2004). *Figure 1* displays some descriptive statistics of key variables of interest from this dataset.

Descriptive Statistics

	Mean	Min	Max	SD	IQR	p25	p75
Age	34.79	2	92.00	21.57	34	17	51
Full-time employed	0.3	0	1.00	0.46	1	0	1
Current gross weekly wage, main job	120.93	0	2,000.00	195.55	210.94	0	210.94
Current net weekly wage, main job	92.73	0	2,000.00	143.25	171	0	171
Current gross weekly wage, 2nd job	1.92	0	2,000.00	25.34	0	0	0
Current net weekly wage, 2nd job	1.55	0	1,115.38	18.208	0	0	0
Total net income	94.28	0	2,000.00	145.202	173.05	0	173.05
Usual hours per week (for employed)	41.35	6	120.00	13.85	8	37	45
Years worked	27.37	1	94.00	17.63	22	16	38
Leaving Cert education	0.62	0	1.00	0.49	1	0	1
Married	0.23	0	1.00	0.42	0	0	0
Female	0.36	0	1.00	0.48	1	0	1

Figure 1: A summary of key variables of interest. Note: individuals who were not employed, and thus earn no wage, were included for these figures, which is why the minimum gross and net wage is zero.

Section Three: Empirical approach

This paper uses a two-period differences-in-differences approach with panel data and two-way fixed effects to estimate whether the policy reform had a causal effect on the increase in women's incomes seen at this time. The differences-in-differences strategy compares outcomes for individuals affected by the policy (the treated group) to those in a control group, assuming that the treated group would have followed the same trend in labour supply as the control group absent any reform – the parallel trends assumption (Fredriksson and Oliveira, 2019 p.520, 523). For robustness, this assumption will be verified both graphically from 1994 - 2001 and using event studies (Roth et al., 2023, p.2235). To establish treatment and control groups and to verify the assumption of parallel trends in the pre-reform period, the mean weekly net incomes of three potential control groups of working-age individuals unaffected by the reform were examined, namely unmarried women, married men and unmarried men. These were compared to the incomes of the treated group, married women, and are tested graphically in *Figure 2*.

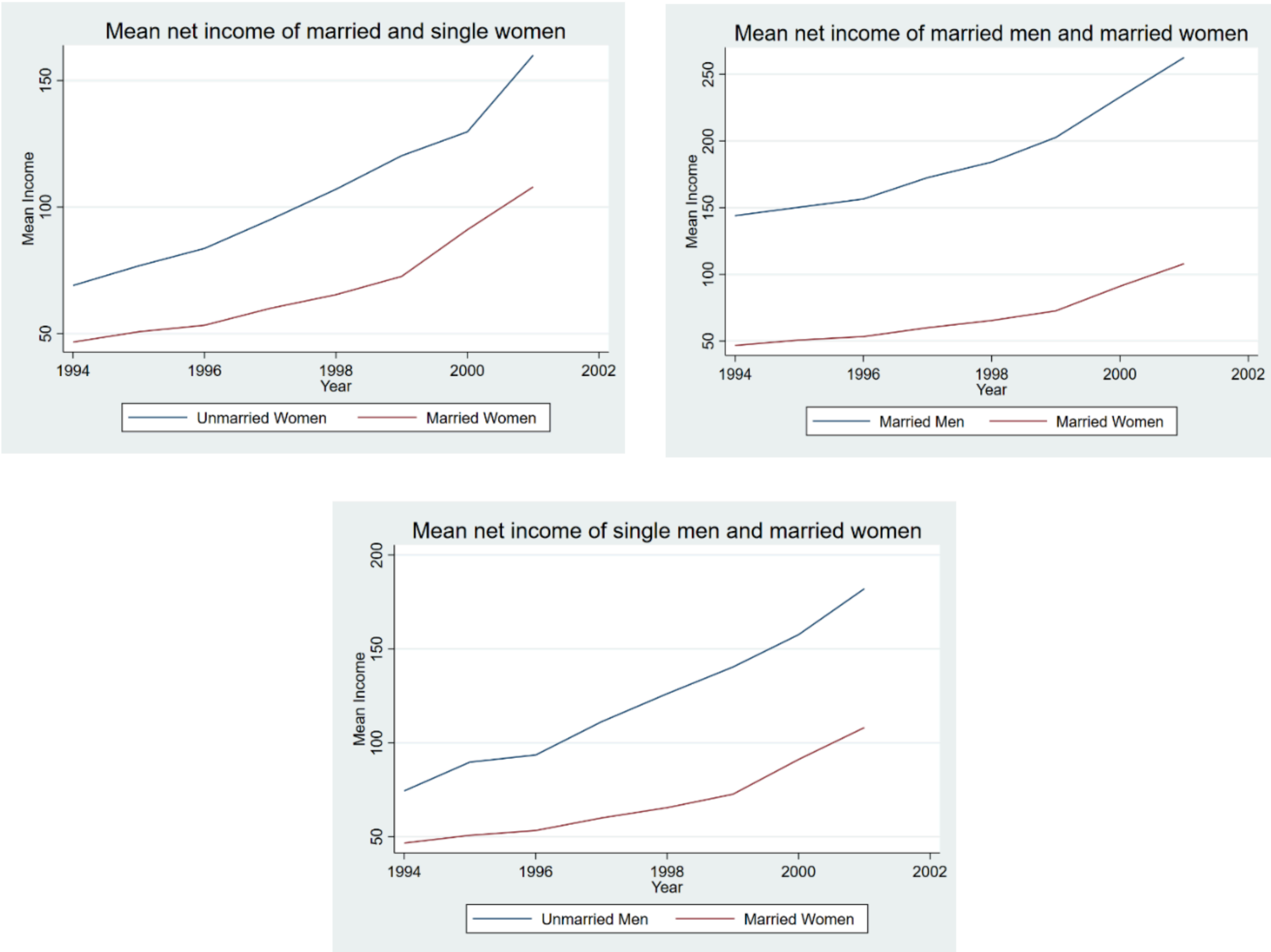

Figure 2: Graphs of married women's average earnings (in Irish pounds) compared to three potential control groups.

All three graphs display an increasing trend in the income of the four considered groups over the years of the survey, however the income of married women sees a sharp spike after 1999.
To further test for parallel pre-treatment trends, three event studies were conducted by regressing income against dummy variables representing the years preceding and following the reform interacted with binary variables for the treated variable, and including control variables for age, whether the individual is in full-time employment, whether they have a Leaving Certificate education and the number of years the individual has worked. The reference year for the event study

was set for 1999, one year preceding the reform, by generating a 'centered' variable which took the value zero for this year. A graph of the event study coefficients for each group is given in *Figure 3*.

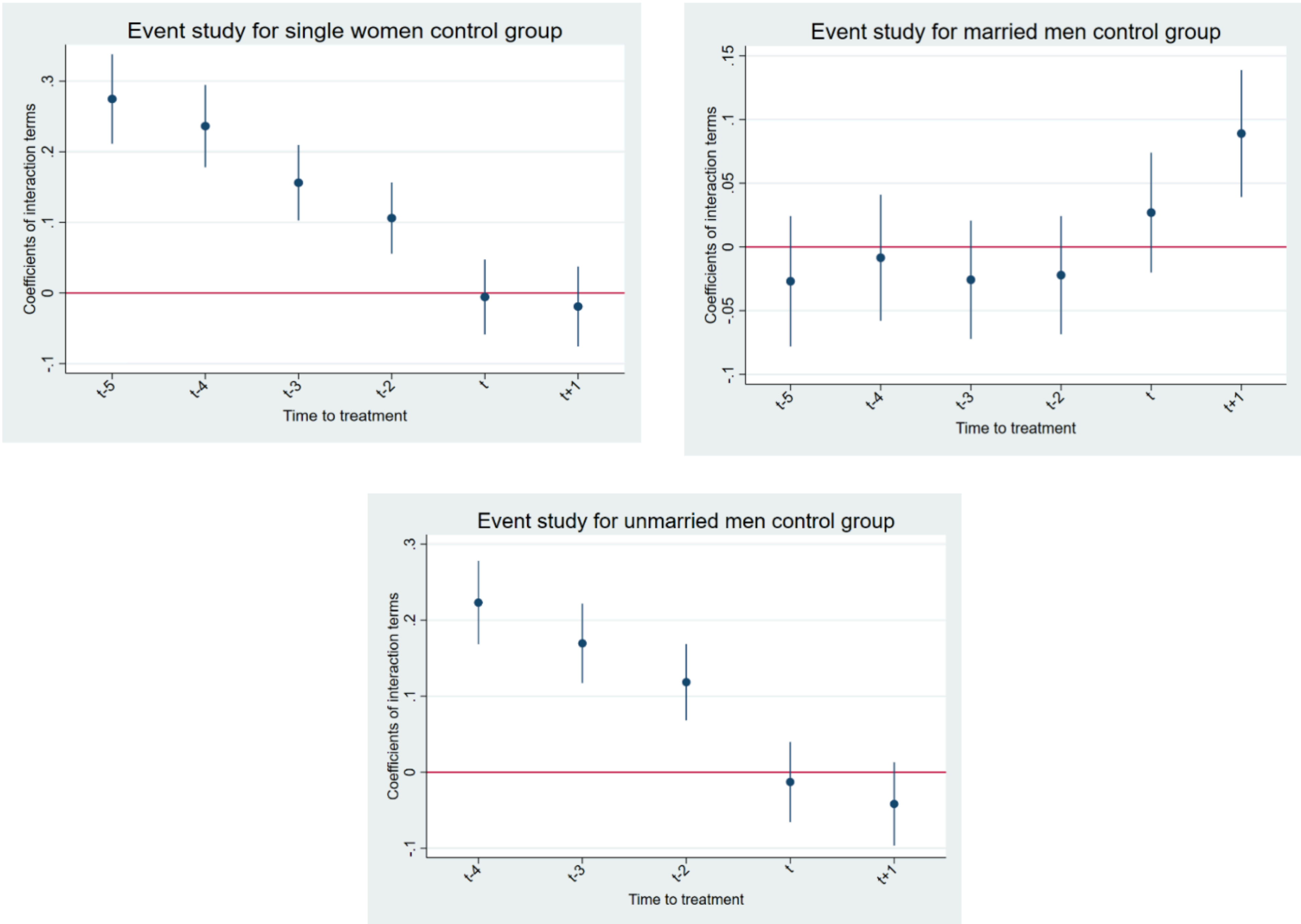

Figure 3: Event studies with three potential control groups.

In the case of the single women and unmarried men control groups, the coefficients of the interaction between the treatment dummy variable and the dummy year variables are different from zero and statistically significant in the years before the intervention. This suggests that there were different trends in income between these groups and the treated group in advance of the policy change and violates the parallel trends assumption. Thus, these controls are not used further in the analysis.

Conversely, for married men and women, the coefficients of the interaction between the treated dummy variable and dummy year variables does not exhibit a trend in the pre-treatment period and are statistically insignificant. However, these coefficients are seen to increase from zero and become statistically significant at the five per cent level in the years following the reform. This suggests that there were parallel trends in income between these groups in the pre-treatment period and indicates that the policy change led to differences in income between the two groups.

Although one might argue that the husband's income is not exogenous to the policy intervention, and thus might itself respond to the reform due to spillover effects (Blundell and Macurdy, 1999, p.1615; Crossley and Jeon, 2007, p.349), own and cross-wage elasticities of married men are generally found to be close to zero (Bargain, Orsini and Peichl, 2014, p.6; Doorley, 2018, p.78). Therefore, it is likely that the effect of this reform on married men's labour behaviour was minimal (Doorley, 2018), and this paper continues the estimation using married men as the control group.

Moreover, to infer a causal estimate it is imperative that no other policy or change occurred which would have differentially affected married men and women at this time other than the shift towards individualisation. Although there were a number of other fiscal policy announcements and changes at this time, Doorley (2018) illustrates that these reforms had a negligible impact on the labour supply incentives for secondary earners (Doorley, 2018, p.82). Thus, the treatment and control groups were likely to exhibit common income trends absent the individualisation reform at this time.

Once a suitable control group was established, the DiD specification was estimated as follows:

$$Log\ Income_{i,t} = \beta_0 + \beta_1(Married\ Women\ x\ Post)_{i,t} + \vartheta X_{i,t} + \delta_t + a_i + v_{i,t},$$

where:

Variable	Description
i,t	i is the index for the *ith* individual and t is the index for time, which is given in years for this dataset.
Log Income	The log of the individuals' total net wage income from their primary and secondary occupations.
Married Women	This is the treated group. It is a binary variable equal to 1 for married women and 0 for married men. Individuals who are married in the first year of the survey as well as individuals who proceed to get married in subsequent years are considered.
Post	This is a binary dummy variable equal to 1 in the post-reform period (2000-2001) and 0 in the pre-reform years (1994-1999). It includes a subscript t for each year of the survey.
Married Women x Post	This is the interaction term between the treated variable and the post variable. Its coefficient will provide the effect of the policy reform on the income of married women.
$X_{i,t}$	A vector of time-varying unit-specific characteristics (e.g. age).
δ_t	Time fixed effects, which affected everyone in the same way (e.g. government announcements).
a_i	Individual fixed effects, which are unobservable characteristics of the individuals in this dataset, but constant over time (e.g. intelligence).
$v_{i,t}$	All unobserved individual-specific time-varying variables which predict income.

Figure 4: A description of the variables in the regression specification.

Both individual and time fixed effects were employed to control for unobservable factors which may otherwise be included in the error term and correlated with the regressors, which would render the estimation biased and inconsistent. In this way, the estimation can get closer to obtaining a true causal average treatment effect, as these unobservables will no longer be causing potential bias and violating the 'zero conditional mean' Gauss-Markov assumption.

Section Four: Results and further analysis

Results

Results from the estimation are presented in *Figure 6*. Four specifications were estimated, in which various control variables (described in *Figure 5*) were successively included. The coefficient of the treated variable interacted with the 'post' dummy variable gives the effect of the partially individualised tax treatment on the income of married women immediately following the policy reform (the 'treatment effect'), and in each case it is positive and statistically significantly different from zero at the one per cent level. This result suggests that the null hypothesis - that the policy had no change on the income of married women - can be rejected. Moreover, the finding is in line with previous empirical research on tax individualisation, indicating that such a policy does indeed increase married women's earnings and financial autonomy.

The initial estimation includes only the post and treated variables and their interaction term and displays that the reform led to an 8.64% positive increase in the net income of married women. The second specification attempts to capture the effect of the treatment whilst controlling for other factors which affect income to avoid omitted variable bias. In this estimation, the policy reform is associated with a 6.44% increase in the income of married women. It is found, however, that age and years working have a very high pairwise correlation value of 0.97, indicating that these variables are likely capturing the same thing and potentially distorting coefficients. Therefore, years working is then removed from further specifications.

The third and fourth specifications incorporate additional control variables, including a squared variable for age to capture the non-linear returns to income as the individual gets older. In both the third and fourth estimations, the policy reform led to an increase in the income of married women by 5.9%, a highly statistically significant result at the one percent level. Note also that as additional variables are included to the model, some observations are dropped due to missing data for the new variables included, which is why the number of observations decreases for each successive specification.

Variable	Description
Age	Age of the individual.
Leaving Cert education	Binary variable = 1 for those who completed Leaving Certificate education or higher, 0 otherwise.
Hours per week	Usual hours worked per week.
Care duties	Binary variable = 1 for those who are not full-time employed (working less than 15 hours per week) and consider their reason to be caring/home duties, and 0 for people who are either full-time employed or not working full-time but for other reasons.
Number of children <18	The number of children less than 18 years old that the individual has.
Father breadwinner	Binary variable = 1 if father was the main breadwinner of the household growing up - could influence a woman's decisions to stay at home
Full-time employed	Binary variable = 1 if the individual works a job or business more than 15 hours each week, 0 otherwise
Disability	Binary variable = 1 if the individual suffers from a disability, 0 if not - could affect their ability to work and therefore their income etc.
Formal education	Binary variable = 1 if the individual has had formal education or training for their current role
Years working	How many years the individual has worked in paid occupations.

Figure 5: The control variables

	(1)	(2)	(3)	(4)
	Dependent Variable Log net income			
Independent Variables				
1.Post#1.Marriedwoman	0.0864***	0.0646***	0.0590***	0.0590***
	(0.0189)	(0.0157)	(0.0158)	(0.0158)
Age		-	-	-
Age squared			-0.000453***	-0.000454***
			(9.20e-05)	(9.24e-05)
Leaving Cert. education		0.0104	0.0128	0.0129
		(0.0261)	(0.0260)	(0.0260)
Hours per week		0.0104***	0.0102***	0.0102***
		(0.000887)	(0.000870)	(0.000871)
Care duties			-0.0409	-0.0409
			(0.0458)	(0.0458)
Number of children <18			-0.0130**	-0.0130**
			(0.00583)	(0.00584)
Formal education				0.00441
				(0.0988)
Father breadwinner				0.00595
				(0.0322)
Disability				0.00216
				(0.0141)
Full time employed		0.0222		
		(0.0426)		
Years working		0.0345**		
		(0.0167)		
Constant	5.372***	4.155***	5.988***	5.983***
	(0.00330)	(0.435)	(0.192)	(0.198)
Observations	11,606	10,850	10,925	10,925
R-squared	0.889	0.896	0.896	0.896

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**

Figure 6: The DiD estimates.

Robustness checks and further analysis

This analysis includes unit and time fixed effects alongside robust standard errors, and therefore heteroscedasticity should not be an issue for these estimates. This means that the variance should be constant across individual observations and the estimation will be efficient.

Furthermore, a log specification of total net income plus one was estimated to examine the effects of the reform for those individuals who previously had a zero net weekly wage. The results in Figure 7 indicate that the reform led to an increase of 7.52% in the net income of married women. This estimate is similar in magnitude to the previous results, although not statistically significant which may indicate that the policy increased the wages of those women already in employment, however it may not have necessarily increased the overall wage level when including new entrants to the labour force, and thus the average treatment effect may be weaker when accounting for this cohort. Furthermore, the reversed signs and statistically significant coefficients in the control variables in Figure 7 may indicate that the composition of the treated group changed when accounting for new labour market entrants. Future research in taxation analysis could further examine how the composition of both groups differs, as well as estimate how employment probabilities and earnings change for pre-existing workers compared to new entrants, as it seems likely that the effect of taxation policies may differ when considering both groups.

VARIABLES	(1) Specification for Log(net income + 1)
Post*Marriedwoman	0.0752
	(0.0574)
Leaving cert. education	-0.0723
	(0.107)
Age	-
Age squared	-0.000414
	(0.000275)
Formal education	-0.816***
	(0.124)
Hours per week	-0.00436**
	(0.00177)
Care duties	-0.227
	(0.172)
Number of children <18	-0.0731***
	(0.0226)
Disability	-0.240***
	(0.0571)
Constant	5.514***
	(0.625)
Observations	15,520
R-squared	0.886

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 7: A DiD regression of log(net income + 1) with fixed effects.

Section Five: Conclusion, addressing limitations and policy implications

Using a two-period differences-in-differences methodology and two-way fixed effects, this paper found that the policy shift in 2000 towards partial tax individualisation in Ireland led to an increase in the income of married women of between 5-8%. There is significant justification for inferring a causal estimate from this specification. Firstly, the income of married men exhibits parallel trends with the income of married women in the years preceding the policy shift, which is verified both visually and with an event study, and thus a strongly suitable control group was established for this quasi-experimental approach. Secondly, no other variables are likely to have affected the treatment and control groups differentially during this time, allowing for isolation of the treatment effect. Moreover, the treatment of partial tax individualisation is exogenously applied to secondary earners, and thus the outcome of interest in this model, net income, does not endogenously determine the treatment status of this group. Thirdly, individual and time fixed-effects are accounted for, controlling for unobservable time-invariant individual effects which may be correlated with the regressors, and decreasing the correlation of the error term with the independent variables. Additionally, multiple control variables, which are not distorted by multicollinearity, are included in the estimates, and thus the 'zero conditional mean' assumption is likely verified for this estimation, unless additional explanatory variables which affect the regressors and the dependent variable are omitted.

This result is in line with previous literature and has important policy implications for understanding how a system of full individualisation would be likely to impact the working behaviours and incomes of married women in Ireland and countries with similar labour markets. However, this estimate captures the average treatment effect of this policy for married women and does not account for potential heterogeneity among different demographics of the population. In future studies, estimating the effect of this policy on the income levels of different classes of women, such as those married to high-income husbands or those higher educated for example, may be beneficial for informing more targeted policy decisions as these groups have been seen to be the most responsive to such reforms (Eissa, 1995; Roantree, 2018). Additionally, including an estimate of gross income rather than net income alone would help to capture the earnings effect of the reform rather than the take-home income effect, as the latter mixes both the behavioural response and the effect of the taxation change.

Some limitations of this paper include the limited external validity, short dataset and potential measurement error due to the self-reporting of income. Firstly, it is unlikely that the results can be generalised to different time periods or other contexts, and as such, an analysis of income changes should be considered when researchers are studying taxation policies in other countries to estimate the effect of such reforms on female consumption capacity. Secondly, as this longitudinal dataset only contains information for two years following the treatment, only the immediate effect of the policy change can be estimated. However, the event studies in Figure 3 indicate that the policy had a significant effect in the second year after the reform, highlighting that the full earnings effect of the policy may take some years to materialise, and thus cannot be fully captured with this dataset. Nonetheless, the estimates are important to understand the immediate impacts of the reform for female labour earnings. Lastly, although fixed effects can reduce bias by controlling for unobservables, they have been known to exacerbate measurement error (Jennings et al., 2024), which may in particular be present in survey datasets due to the self-reporting of income. Future studies could consider the use of administrative data or explore matched employer-employee data to reduce measurement error and increase precision when employing fixed effects to examine taxation policies.

The findings in this paper have important implications for policymakers considering future taxation and welfare reforms for Ireland, highlighting the incentive labour market effects such policies create and how the use of taxation policies can reduce income inequality between spouses and enhance female financial autonomy. As such, the results of this research will be of relevance for policymakers trying to understand individual and families' earnings and labour market decisions in response to fiscal reforms and create policies to foster gender earnings equality.

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CAN NUDGING STUDENTS INCREASE VOTER TURNOUT IN STUDENT UNION ELECTIONS? AN EXPERIMENT DESIGN

PATRICIA FINLAY, SALONI KHOSLA, PENG NAN ANG

SENIOR SOPHISTER

"This proposed study lies at the intersection of behavioural economics and political engagement by investigating the efficacy of digital nudges in stimulating voter participation among students at Trinity College Dublin (TCD). As democratic participation is pivotal for an inclusive society, this experiment design aims to address the pervasive issue of low voter turnout observed in TCD's Student Union (SU) elections. By leveraging the college's Learning Management System (Blackboard), the proposed study introduces online prompts to nudge students to vote in the SU elections. Building on previous research, this proposed study employs a unique approach within the student election context, aiming to cultivate a culture of engagement and inclusivity within the college community. The experiment design's primary objective is to assess the impact of online nudges on voting behaviour through a multiple treatment-control setup, utilising 'mere measurement' and 'implementation intention' treatments. By analysing data collected from SU statistics & daily surveys, the proposed study seeks to quantify the influence of exposure to nudges on voting patterns, while controlling for demographic factors. Furthermore, the research extends beyond the college setting, with implications for broader policy discussions on enhancing youth participation in democracy. This essay contributes to the growing body of literature on behavioural interventions in democratic engagement and emphasises the potential of digital nudges in fostering democratic participation among young voters".

1.1 State-of-the-Art / Literature Review

This review aims to provide a brief overview of the literature on nudges and summarise results from similar studies to our proposed experiment.

Nudge Theory

According to Thaler, Sunstein and Balz (2013), there are 6 principles of nudge theory. Pertaining to our project, we refer to the first principle i.e. 'people have default courses of action that they will fall back on if choices are too complicated or time-consuming'. Engaging in voting is an action that usually involves mindless choosing on the part of voters (Thaler and Sunstein, 2008), which is why we have decided to employ a behavioural nudge for this action. Our project aims to increase voter participation which is integral to the fabric of democracy.

Nudging students

According to Neri et al. (Students into voters, n.d.), aside from other behavioural factors, students often lack clarity regarding the specifics of voting, frequently overestimating the complexity of the procedure. Additionally, since voting isn't prominently highlighted on campus, it fails to prompt students to think about registration in a concrete manner. There is also evidence from a 2020 Mumbai-based study (Khandelwal, Tagat, and Kapoor, 2020) that behavioural interventions can improve voter registration, especially for first-time voters. This is exactly what our nudge seeks to exploit. Further evidence also exists that informational nudges by themselves are not very effective in improving student academic outcomes but contribute towards increasing student satisfaction and improving their sense of belonging to the university (Davidson, Yongyuan, and Price, 2023) - which could be another potential benefit of our nudge.

Nudging voters to increase participation

Randomized experiments conducted during the 2006 US midterm elections and the 2005 German federal election implemented 2 treatments namely the 'mere measurement' treatment and the 'implementation intention' treatment. These treatments ask voters if they intend to vote and who they intend to vote for, respectively. Both the nudges increased voter turnout, but the former was more effective for shorter-term goals while the latter was effective for both short- and long-term goals (Imai et al., 2007). The literature surrounding the notion that asking questions leads to an increase in positively viewed behaviours is abundant- the most relevant are Greenwald et al. (1987), Sherman (1980), Morwitz & Fitzsimons and Spangenberg et al. (Spangenberg et al., 2003). The implementation intention treatment is based on Gollwitzer's research (1999). Their subsequent research on the matter points towards the benefits of providing goal intentions through a nudge (Gollwitzer and Sheeran, 2006). Cialdini (2003) also underscores the importance of displaying norm-based cues at the point of decision, precisely where and when the decision is made, to enhance the effectiveness of nudges. There is also further evidence that people often vote because they want to be known as voters (Harbaugh, 1996), and so they can tell others that they voted (Dellavigna et al., 2017). This is where peer pressure comes into play. Our project aims to exploit all these biases to increase voter participation.

Voter participation

In a 2016 study at the University of Mount Union, it was discovered that even nudging students to watch the presidential debates was able to increase voter registration and participation. It also points to the long-term policy benefits, as motivated college students continue to participate in democracy later in life, hence highlighting the long-term policy implications of the nudge (Using Campus Presidential Debate Watch Events to Nudge, n.d.). As discussed earlier, an absence of availability and convenience to vote on college campuses can result in low voter participation (Santos et al., 2019). Findings of a 2014 paper on the factors influencing young adults' voter behaviours (Winchester, Binney, and Hall, 2014) also indicate that in cases of low-involvement voter decision-making, perceived knowledge and passive information-seeking play significant roles. This is especially relevant as our second nudge aims to passively provide information about voting to the participants by pushing them to think about who they want to vote for.

Voter behaviour

According to a study on voting behaviours of postgraduate students, important factors influencing voter behaviour are family, education and rationality (Frontiers, n.d.). Our experiment will be conducted on a sample that randomises across these dimensions to absorb any effects of these factors on voter participation.

1.2 Description of the proposed experiment

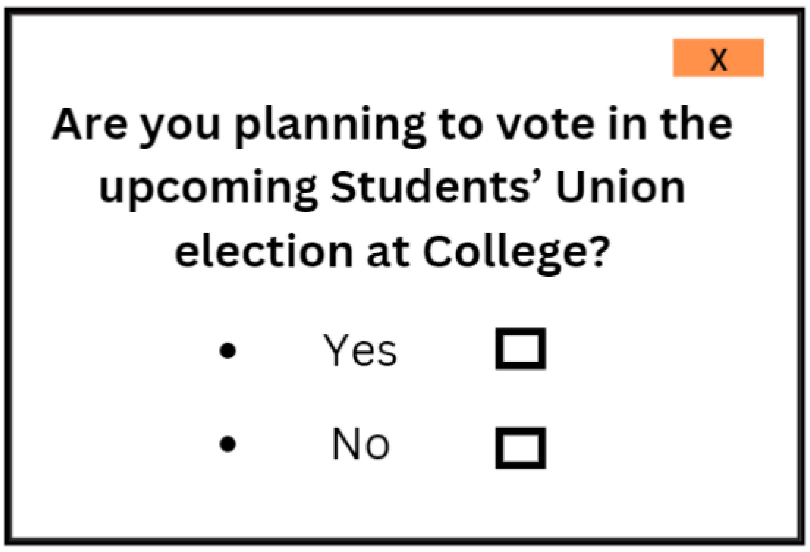
The proposed study's aim is to examine the effects of a notification on Blackboard in the lead-up to the annual Students' Union (SU) elections on campus as a behavioural 'nudge' for students at Trinity College Dublin, with a focus on increasing the number of students who cast their vote. The online portal Blackboard was chosen instead of alternative methods of notifying students, such as an email reminder, as all Trinity students must log on to this platform to access their course content and most students do so every day. In this way, the notification is designed to target the greatest number of students for the greatest amount of time. The experiment design will be conducted as follows:

Five random samples of one thousand students each will first be obtained from the Academic Registry. The IT Services Department will then implement the notification for students on their Blackboard account. We will assign one group to be the control group, who receive no treatment, and we will have four treatment groups. Student identities and numbers will be anonymised for the researchers, but certain information will be provided by the Academic Registry about several characteristics of the students in the samples. These characteristics will be used as control variables, namely the binary gender of the student, their age, their year of education, the faculty in which they study and whether the student is an undergraduate or postgraduate. We will exclude those who are on exchange from our samples - these students will not be logging on to their Blackboard in the lead-up to the election as they will be signing into their host institutions' online accounts, therefore rendering the nudge ineffective for them.

Our treatments are inspired by the work of Goldstein et. al. (2007), in which the researchers found that an implementation intention treatment for voters in advance of an election (asking people if the mechanics of how they intend to vote) increased voter turnout more than a mere measurement treatment (asking people only whether they intend to vote or not). We propose two short-term and two long-term treatments using mere measurement and implementation tactics as follows:

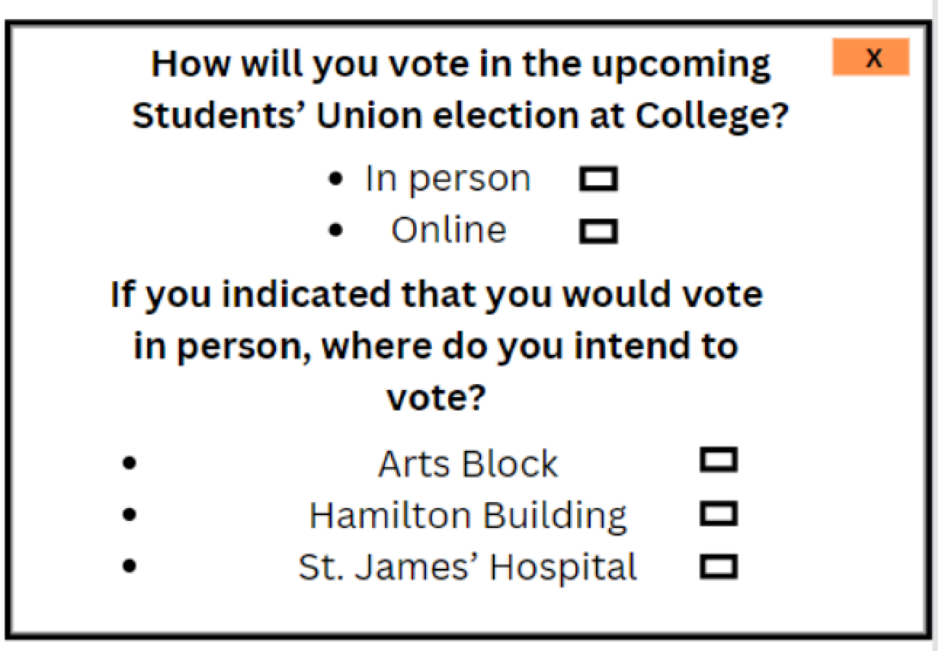
The first long-term treated group will receive a notification once every day for a week, a month before the Spring elections. The prompt will ask if the student is planning to vote in the upcoming College election, with an option for the student to answer yes or no to this question, thereby implementing the 'mere measurement' treatment. As this is a nudge, the student always has the option to opt out of answering the question at all. This notification reminder will be given to this group four weeks in advance of the Students' Union election and will cease after a week of daily notifications.

The second treated group will receive a mere measurement notification in the week directly preceding the Spring election, in the same manner as above: once a day for a week, with the notification ceasing after seven days. The only thing that changes about this notification is the timing with respect to the election at which it takes place compared to the long-term mere measurement group. The notification will appear as follows:



Treatment Groups 1&2 notification

Next, two treatment groups will receive implementation treatments, in which they will be asked about how they intend to vote. Students will be asked if they intend to vote in person or online, and, if they intend to vote in person, which location they will vote in. The student will have the option to click an answer and an option to exit the notification as before. These questions are designed to stimulate the students' active thinking about how they would execute their vote in the election period. The long-term treated group will receive a notification in the same manner as the mere measurement long-term treated group, that is, once a day for a week, exactly four weeks in advance of the upcoming election, and the notifications will end after seven days. The short-term treated group will also receive their notifications every day for a week but at a closer timeframe to the elections, namely for seven days in the week directly preceding the election. In this way, there is no risk of attrition in this experiment, whereby participants in the sample may drop out of the Treatment or Control groups or change groups from Treatment to Control or vice versa, as participants cannot leave the treatment group during the treatment period. The notification will appear as follows:



Treatment Groups 2&3 Notification

To estimate the effect of the treatments on voting behaviour at college, the Academic Registry will email those students who were in the Treatment and Control groups a short survey the day after the voting period closes which will provide anonymous data on whether the students chose to vote in the election. There will be two questions for those in the Control group, with an additional four questions for the students in the Treatment groups. The survey will ask the students whether they voted in the election, how many Union officers they chose to vote for, how often they logged in to Blackboard during the treatment process, if they tended to answer the prompt that appeared on Blackboard or exit the notification, whether they had intended to vote before receiving the notifications and if they believed that the notification influenced their decision to vote in the election. During the design of this experiment, we tested it on actual students at TCD, which assisted in making the questions as comprehensive as possible using accessible language and provided clear information at the beginning of the survey, informing students what their answers will be used for.

Answers will be provided anonymously to the researchers, and participation in the survey is voluntary. As there is the possibility that students will choose not to answer the survey questions, we propose to offer an incentive, whereby the Academic Registry will randomly select three students who submit responses and award them a One4All voucher of one hundred euros each. This will help to encourage more participation and survey answers so that our sample size of responses does not become very small.

The outcome of interest in the experiment is whether the student chose to vote in the Students' Union election or not, and we will estimate a linear probability model of these students to quantify the effect of our behavioural nudges and treatments. Using the individual data collected anonymously at the beginning of the experiment, we estimate the basic model in (1).

(1) The original regression specification

$$\boldsymbol{Voted}_i = \beta_0 \boldsymbol{Male}_i + \beta_1 \boldsymbol{Year\ of\ education}_i + \beta_2 \boldsymbol{Undergraduate}_i + \beta_3 \boldsymbol{Treated1}_i + \beta_4 \boldsymbol{Treated2}_i + \beta_5 \boldsymbol{Treated3}_i + \beta_6 \boldsymbol{Treated4}_i + \boldsymbol{u}_i$$

Our survey will collect cross-sectional data where we are examining individuals at one fixed point in time. The subscripts *i* in the regression denote the value for the *ith* student, where $i \in \{1,2,\ldots\ldots,n\}$ and n denotes the total number of students who respond to the survey. The true random sampling of all students in our treatment and control groups will ensure that we can attribute any difference in the behaviour of both groups solely to the effect of the nudge to alter these students' behaviour, thereby obtaining a causal estimate. Additionally, as these students are randomly assigned, nothing should be correlated with both the regressors in the model and the dependent variable. Therefore, there should be no omitted variable bias in our regression specification, making our regression estimation unbiased and consistent. Control variables are included in the estimation, however, to reduce the variance of the error term and provide lower standard errors in our estimates. The βi coefficient of the $Treated_i$ variable represents the causal effect of the four treatment programs on the probability of voting, compared to being in the Control Group.

Additionally, we intend to extend the model to include additional variables obtained using the data collected from the survey alongside the information provided to us at the beginning of the experiment by the Academic Registry. For example, in equation (2) below we examine the effect of the treatments on the likelihood that the student chose to vote in the upcoming election by including the controls of age, faculty, and whether the student logged in each of the seven days in the estimation (age replaces year of education in specification (2) as age and year of education are likely to suffer from multicollinearity, potentially distorting the estimates if both variables are included). Moreover, an analysis of interaction terms will provide additional insights into how the treatment may differ across subgroups of the college community, which will help to inform more targeted interventions. The interaction term $Male\ x\ Treated_i$ gives the estimated differential effect of the first treatment on men compared to women and $Undergraduate\ x\ Treated3_i$ will provide the coefficient of the estimated differential effect of the third treatment on undergraduates compared to postgraduates.

(2) The extended regression specification

$$Voted_i = \beta_0 Male_i + \beta_1 Age_i + \beta_2 Undergraduate_i + \beta_3 Treated1_i + \beta_4 Treated2_i + \beta_5 Treated3_i + \beta_6 Treated4_i + \beta_7 Logged\ in\ for\ 7\ days_i$$
$$+ \beta_8 STEM\ Faculty_i + \beta_9 Male\ x\ Treated1_i + \beta_{10} Undergraduate\ x\ Treated3_i + u_i$$

2.1 Motivation

The motivation for our experiment stems from a belief that democratic participation in voting plays a vital role in shaping an inclusive society. Furthermore, 2024 was widely regarded as the year of elections, affecting at least 64 countries, representing about 49% of the global population. In the context of Trinity College Dublin (TCD), we identified a lack of engagement in voting in the annual Student Union (SU) election, with a mere 10% of the student population casting their votes in the 2022-23 SU elections (Trinity College Dublin Students' Union, n.d.). By identifying this problem, we were motivated to contribute towards cultivating a culture of engagement within the college body. In addition, the results of the SU election have a direct impact and shape the student's holistic experience in TCD- evidence for this impact has been discussed above. Low voter turnout is a testament to apathy and shows disengagement among students within TCD, which is disappointing.

As such, our experiment would be relevant and critical to encourage a higher participation rate in the annual SU election. By introducing a gentle nudge on Trinity's Learning Management System, Blackboard, we hope to steer individuals' behaviour and improve participation enthusiasm among TCD students in the context of the SU election. Through examining the mechanics of voter behaviour, our team seek to catalyse a chain effect which extends beyond institutions, fostering a more inclusive ecosystem for current and future generations.

2.2 Innovation / Novelty

The experiment represents a pioneering exploration of behavioural economics and democratic participation via voting. While prior studies have investigated the efficacy of nudges in another context, our experiment represents an effort to apply these principles within the context of student elections at Trinity College Dublin (TCD). In our study, we have a unique approach by applying digital nudges through our college's Learning Management System, Blackboard.

2.3 Experiment Objectives

The primary objective of the experiment design is to assess the efficacy of digital nudges in stimulating voter behaviour among TCD students. Through a carefully designed experiment of treatments and control, we seek to investigate causal relations between exposure to mere measurement or implementation intentions prompts at different points before the election, and the subsequent patterns of voting turnout. By analysing the potential outcome of the intervention, we would hope to provide empirical evidence to highlight the effectiveness of 'nudge' in enforcing participation in the SU election context.

We plan to gather Student Union (SU) statistics daily leading up to the final election date, comparing voter turnout between treatment and control groups to ascertain whether the nudge influenced electoral behaviour. We aim to discern whether the treatment groups exhibited a higher voter turnout relative to the control group, providing evidence of the nudge's effectiveness. The experiment design aims to explore the presence and magnitude of behavioural biases that may impede optimal engagement in the electoral process. At the end of the election, we will gather data provided by the Academic Registry and SU, performing regression analysis to examine the impact of various factors, including gender, education level, age, and the presence of the nudge intervention, on voting behaviour. By examining the coefficient of the treated variables in our regression model, we can quantify the extent to which the nudge influenced the probability of voting, providing insights into the effectiveness of our intervention compared to the control group.

2.4 Relevance to the needs of the Ireland, Europe, and the world

Empowering and including young voters has particular importance. It is in young voters' hands to change the status quo of society, and an essential medium for that change is through voting. (League of Women Voters, 2024). Technology facilitates the youth of today to be more involved with ethics and activism, supporting leaders and companies who abide by their ethics (BBC, n.d.). In this vein, technology, via nudging, can target the young population, motivating them to think about voting and who to vote for.

Our experiment has important policy implications for real-world democracies. Increasing voter participation, specifically amongst college students, can prove essential as politically active young people are motivated to maintain their engagement in politics into adulthood (Pritzker, Springer, and McBride, 2015). The results of this experiment should be able to prove the efficacy of such nudges and the impact they could have on the voting behaviours of the youth throughout the country, assuming Trinity provides a representative sample. It could potentially also be extended to other countries in which young voters share similar characteristics with Ireland and want to increase democratic participation among the college-age population.

Young voters are deficient in essential voting-related social connections as it hasn't yet become a norm. First-time voters lack a support network of experienced voters and the confidence that voting is fulfilling i.e. a lack of social capital is associated with voting (Bogard, Sheinheit, and Clarke, 2008). Finally, our experimental nudge could be further adapted to utilise peer pressure and social norms to introduce social capital related to voting for students.

Conclusion

This paper has designed a novel nudge experiment aimed at increasing voter participation in student union elections at the university. By leveraging both 'mere measurement' and 'implementation intention' treatment designs, this experiment will assist in encouraging student engagement with elections at college whilst improving representation among voters in election turnouts. The estimated effect may be causally obtained by analysing random samples of students from treatment and control groups, allowing for an empirical assessment and quantification of the study's effect. Moreover, a similar experiment may be conducted in other higher education institutions or countries to verify the external validity of this approach and to increase voter participation in alternative settings. Finally, the design of this experiment has important policy implications for those interested in encouraging greater participation in democratic elections and can serve as a valuable tool for improving civic engagement on a broader scale. The impact of this experiment may extend beyond the college setting as improved voter habits may be carried forward by the individual to other elections in society more generally. Moreover, by utilizing behavioural insights to nudge individuals toward positive outcomes, this experiment offers a scalable and low-cost solution for enhancing voter turnout for policymakers, not just in university elections but in various democratic processes, potentially leading to a more informed, active, and representative society.

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Investigating the Differential Effect of The Sexual Offences Act (2017) on the Reporting of Sexual Violence Between Ireland and Northern Ireland.

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"This paper investigates the effect of the Sexual Offences Act (2017) on the reporting of sexual offences in Ireland, using Northern Ireland as a control. The Act expanded offence definitions and introduced protections such as anonymity for complainants and accused persons. The paper utilizes the differences-in-differences approach at district level, while controlling for other factors. It finds a small and positive effect of the act on reporting. However, this estimate is likely not causal, due to district-specific factors correlated with the introduction of the act and limitations of the data. While the findings highlight the importance of legislation on the reporting of sexual crimes, more data and research are needed to increase their strength."

Introduction

Sexual violence is extremely prevalent in Ireland with four in ten people experiencing it in their lifetime, this figure reporting higher for women (52%) compared to men (28%) (RCNI, 2023). Sexual violence impacts survivors by negatively impacting their physical and mental health, behaviour and habits, productivity and finances, social life, sleep, relationships, and more (RCEW, 2024). The social and economic costs of sexual violence are enormous and the effects of this ripple through society with women suffering isolation, inability to work, loss of wages, lack of participation in regular activities, and a restricted ability to care for themselves and their children (WHO, 2024). Sexual violence is the most underreported crime (Kilmartin and Alison, 2007), which is largely attributable to fear of "secondary victimisation" in court with concerns about the legal system regularly cited as reasons for non-disclosure to police (Hanly, Healy, and Scriver, 2009). When rape is not reported, the victim may not be able to access support services, the offender is not treated to prevent further violence and information about the nature of sexual violence and its impacts is lost (Feldman-Summers and Norris, 1984). Thus, determining what increases the reporting of these crimes so perpetrators can possibly be prevented from causing more harm, and so survivors receive help from support services, is of utmost interest.

The central contribution of this report is an attempt to investigate the differential effect of Ireland's Sexual Offences Act (2017) on reporting for sexual offences between Ireland and Northern Ireland. This act broadened the definition of sexual offences and introduced several protective measures for complainants, including anonymity for the complainant and accused until proven guilty under section 30. The purpose of this contribution is to test the hypothesis that progressive legislation which introduces measures to protect survivors of sexual violence in the criminal court system increases reporting of sexual offences by improving affective attitudes towards the legal system. This report defines a sexual offence and violence synonymously as any crime involving a sexual act as characterised by the Sexual Offences Act, "A 'sexual act' means— (a) an act consisting of— (i) sexual intercourse, or (ii) buggery, (b) an act described in section 3 (1) or 4 (1) of this Act, or (c) an act which if done without consent would constitute a sexual assault; 'sexual intercourse' shall be construed in accordance with section 1 (2) of the Principal Act.".

This report uses a differences-in-differences model, exploiting the unique case of Ireland and Northern Ireland. In Ireland, laws grant a much higher level of privacy for both the complainant and the accused compared to laws in Northern Ireland (Bacik 2018). It applies regression analysis to a panel dataset consisting of district-level data on reports for sexual offences with controls for alcohol consumption, weekly earnings, the gender earnings gap, mental illness prevalence and recession and COVID-19 lockdown indicators between the years 2014-2021. This report's key finding is that the Sexual Offences Act (2017) had a positive differential effect on reporting of sexual violence in districts in Ireland compared to districts in Northern Ireland when controlling for other factors and absorbing unit and time-fixed effects.

Literature review

Therapeutic justice

An investigation of this specific type has not been conducted yet in Ireland or Northern Ireland. Yet, there are studies of a similar nature. Diesen and Diesen (2010) investigate the link between law and therapeutic effects by concentrating on the anti-therapeutic consequences of a particular statutory structure, focusing predominantly on Sweden and England. They find that both progressive law and its application must be in harmony if the satisfactory effects of reform for the protective interest of survivors are to be realised. Other studies also demonstrate that victims are often more concerned about public validation for the crime rather than engaging in retribution (Herman 2005) and that doubts about pursuing a complaint can often relate to fears and concerns around confidentiality, involvement with the police, and reprisals from perpetrators and their supporters (Chambers and Millar, 1983). Although no explicit connection between crime reporting and the type of law enacted is made in these studies, they illustrate that progressive non-consent laws, compared to regressive coerced-based laws, have a positive impact on the complainant's court experience, which lends to the notion that the law could be instrumental in reporting.

Law and survivor's perceptions of the criminal court system

A review by the Inspectorate in Prosecution (2017) for Scotland states the wider definition of rape and attempted rape introduced by the '2009 Act' as one of the possible reasons for the rise in sexual offence reports. However, one of its key findings is that the use of legal terms with victims creates barriers and a sense of detachment from the legal system. This suggests that language around new legislation could deter survivors from reporting. Contrarily, survey-based research conducted in Ireland demonstrated that out of 34 survivors of sexual violence who agreed to collaborate with the researchers, 18 stated reasons relating to criminal justice factors for why they did not report the offence to Gardai; this included 5 out of fear of the legal process and 10 for a lack of faith in the criminal justice system (Hanly, Healy, and Scriver, 2009). Their research finds that while incident characteristics and social pressure to report are significant, the strongest determinant of reporting is its perceived benefits. These studies imply that measures improving the justice system and perceptions of it could increase reporting, assuming new measures alter survivors' perceptions of the legal process. However, they also suggest that trying to engage in 'legal-speak' may actually obstruct disclosure.

Factors contributing to sexual violence and reporting

Alison and Kilmartin (2007) draw upon numerous studies to identify the factors contributing towards sexual violence. They find that alcohol consumption & alcoholism, micro and macro social structures, economic and political power imbalances between the sexes, resentment by men towards their father and women, mental illness, hypermasculinity & misogyny, social separation of the sexes, child abuse of the perpetrator, and male involvement in childcare activities, all correlate strongly with, and potentially contribute to, sexual and interpersonal relationship violence. They also found that men were less likely to report rape than women but were more likely to do so if they needed medical attention. Several variables were found to be predictive of reporting for women: the presence of physical injuries, when the offender is a stranger, when a weapon was present during the crime and when the offender also stole property from the victim. Hanly, Healy and Scriver (2009) also draw from studies which arrive at similar findings. This suggests that any model attempting to capture the effect of a law on reporting should attempt to control for the other factors listed which evidently contribute to sexual violence and its disclosure.

Overall, the literature generally supports the notion that perceptions of the legal process contribute to survivors' experiences and motivations for reporting/non-reporting, thus supporting the hypothesis that legal reform increases disclosure. This report aims to position itself in the seemingly limited literature on the effect of new legislation on the reporting of sexual violence.

Empirical Approach

The difference-in-difference approach aims to gauge the causal effect of the Sexual Offences Act (2017) on reporting by comparing the number of reports for sexual offences in districts between the regions of Ireland and Northern Ireland prior to and after 2017. Since the law was introduced in February 2017, this analysis takes the year 2017 as the boundary mark for treatment implementation. The treatment cohort are therefore districts in Ireland, while those in Northern Ireland act as the control. Thus, the average treatment effect can be formally described as:

$$\delta = \{\left[Y_2(Region = 1,\ Post2017 = 1) - Y_1(Region = 1,\ Post2017 = 0)\right]$$
$$- \left[Y_4(Region = 0,\ Post2017 = 1) - Y_3(Region = 0, Post2017 = 0)\right]\}$$

The first difference captures the difference in the treatment group, districts in Ireland, before and after the introduction of the Act. The second difference represents the change in the control group, districts in Northern Ireland, before and after the boundary mark. Thus, the difference between these two regions is the treatment effect. Therefore, the general specification for the regression is:

$$Reports_{i,t} = \beta_0 + \beta_1 Region_i + \beta_2 Post2017_t + \delta_1(Region_i\ x\ Post2017_t) + Alcohol\ consumption_{i,t} + Female\ earnings\ as\ a\ proportion\ of\ male\ earnings_{i,t} +$$
$$Average\ weekly\ earnings_{i,t} + Mental\ illness\ prevalence_{i,t} + Lockdown\ indicator_{i,t} + Recession\ indicator_{i,t} + u_t + \gamma_i + \varepsilon_{it}$$

Where i is a given district in year t. $Reports_{i,t}$ represents the dependent variable, reports of offences. δ_1 represents the treatment effect and stands for the interaction of 'Region' and 'Post2017', the treatment effect which is the variable of highest interest. The value of this, and its significance while controlling for other significant explanatory variables for sexual violence, will enable better determination of the effect of the Sexual Offences Act on reporting of crimes. The expectation is that the Act will have a minor positive linear effect on crime reporting, and so, the treatment effect should emerge positive. The model includes controls for alcohol consumption, the gender earnings gap, mental illness, the COVID-19 lockdown, and recessions. It is expected that each of these controls will be positively correlated with the dependent variable except for 'Average weekly earnings'. u_t represents time-fixed effects while γ_i represents unit fixed effects. ε_{it} represents the unobservable time-varying and unit-varying factors.

Dataset description

Primarily, Irish data was sourced from various reliable databases created and made publicly available online by the CSO (no date). This included police district-level data on reports of sexual offences extending from 2023 as far back as before 2000. A sample of observations for the years 2014-2021 was selected, however, as this period allowed me to include data for my regression controls. CSO county-level survey data for mean weekly earnings for both full-time and part-time working males and females was used to help create my panel dataset.

Since the data was county-level, the average of two counties' mean weekly earnings was taken where police districts covered two counties. In cases where counties were divided into several police districts, the values for male and female earnings for that county were used across all its districts. However, data on litres of alcohol consumption per capita per year (collected by the CSO using data on sales tax receipts) and annual hospital admissions related to non-organic mental illness (collected by the CSO from HSE administrative data) could not be found at a county or district level. Data was also collected on GDP percentage change and on the timeline of COVID-19 measures sourced from news articles such as 'The Journal' and 'The Irish Times' to create the 'Lockdown' and 'Recession' dummies. Thus, while the control variables can be used to account for differences between Ireland and Northern Ireland and district-level differences to a limited degree (in the case of variables created using data on earnings), the major drawback of the controls is that regressions involving them will not accurately account for differences in effects between districts.

The case was slightly better for Northern Ireland. Data on reports for each local government district were available in PSNI databases. I was able to source local government district survey data on mean weekly earnings for both sexes from NISRA's databases. However, data on litres of alcohol consumption per capita per annum was collected using the figures for the UK and Northern Ireland from WHO databases which were not available at a local government level. The Department of Health Statistics and Research enabled the collection of annual administrative data on hospital admissions for non-organic mental illness, but this was also not at a local government district level. Thus, regressions involving the Northern Irish data for control variables faced the same disadvantage as for Irish data.

In the 'Descriptive Statistics' tables, 'LACC' abbreviates 'Litres of Alcohol Consumption per Capita', 'FEPM' abbreviates 'Female Earnings as a Proportion of Male earnings (average nominal)', AWE abbreviates 'Average (nominal) Weekly Wages'. 'Total reports' represent reports for rapes, sexual assaults and sexual offences made to the police and 'Mental illness' represents annual mental illness prevalence by hospital admissions for alcohol and drug disorders, neurosis, depressive disorders, behavioural and emotional disorders, and personality disorders.

	N	Mean	Median	Min	Max
Total reports	312	221.494	195.500	53	1078
LACC	312	10.362	10.700	9.4	11.2
FEPM	312	.769	0.762	.633	.911
AWE	312	629.817	641.593	348.65	955.475
Mental illness	312	7652.599	9048.000	2822	10106

	IQR	p25	p75
Total reports	117.5	142.5	260.000
LACC	1.3	9.7	11.000
FEPM	.066	.734	0.800
AWE	225.271	506.575	731.846
Mental illness	6053	3673	9726.000

Figure 1: Descriptive statistics

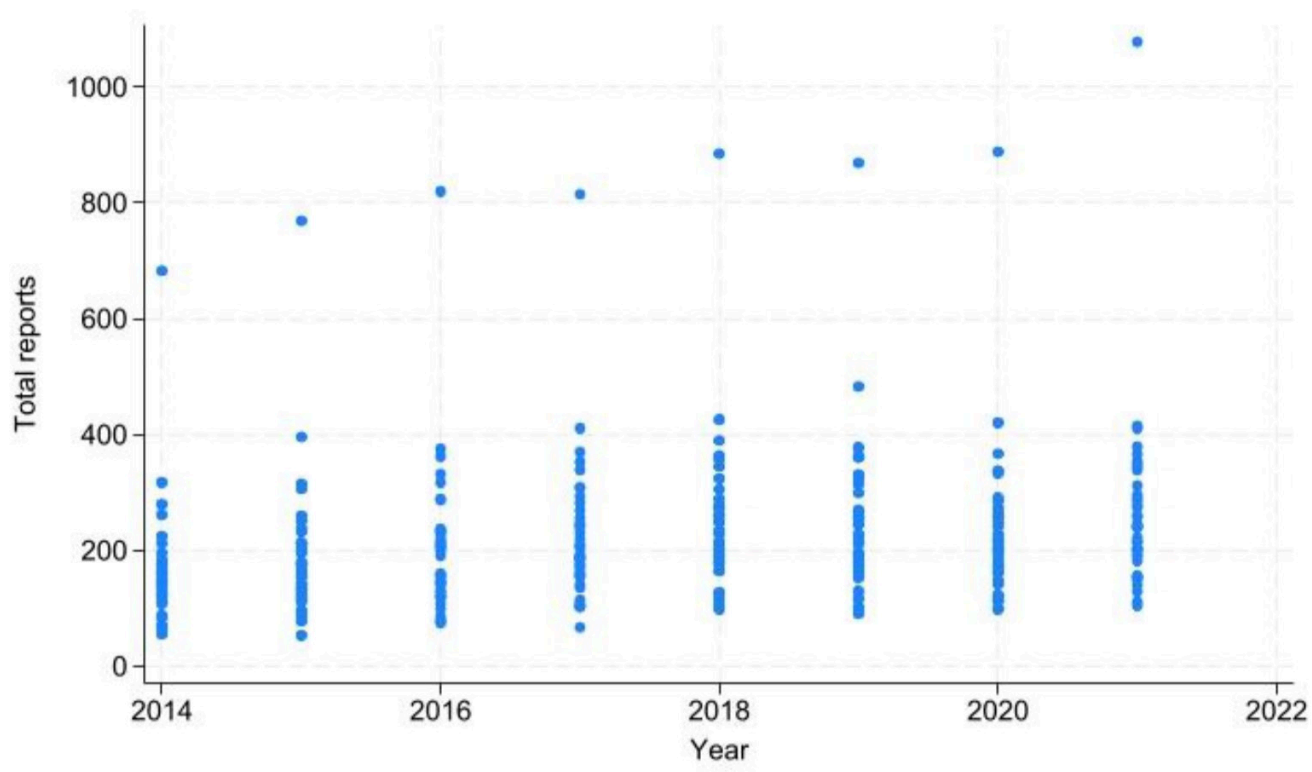

Figure 2: Reports by districts over 2014-2021

The descriptive statistics table and *Figure 2* both illustrate the high variability in crime reports between districts. One should also note the substantial range for mental illness prevalence and average weekly wages.

Empirical results

The defined regression is implemented via OLS regression. Various specifications were used including a First Differences approach (2) and Fixed Effects (3) approach to absorb unit and time-fixed effects, including for controls. The results of each regression are presented below.

VARIABLES	(1) Pooled OLS	(2) FD	(3) FE
1.Post2017	7.903		
	(41.34)		
Region	-285.7		
	(264.0)		
DiD	3.269		65.35**
	(53.05)		(2.405)
LACC	20.11		33.42**
	(28.01)		(1.938)
FEPM	264.4*		129.1*
	(142.6)		(14.93)
AWE	0.798***		0.263
	(0.114)		(0.0603)
Mental_illness	-0.00843		0.0717**
	(0.0412)		(0.00359)
Lockdown	-39.59		60.63***
	(44.57)		(0.654)
Recession	3.515		3.344***
	(49.23)		(0.00562)
oD.Post2017		0	
		(0)	
D.DiD		3.169	
		(43.60)	
D.LACC		59.54	
		(52.35)	
D.FEPM		-364.1**	
		(178.9)	
D.AWE		0.703***	
		(0.130)	
D.Mental_illness		-0.0430***	
		(0.0139)	
D.Lockdown		84.73	
		(89.51)	
D.Recession		2.040	
		(50.31)	
Constant	-421.6	-2.080	-980.8**
	(333.9)	(8.492)	(40.80)
Observations	312	304	312
R-squared	0.362	0.181	0.960

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**

Figure 3: OLS regression estimates

The estimates for the treatment effect (DiD & D.DiD) from both the Pooled OLS and First Differences approach are statistically insignificant and much smaller than the statistically significant estimate calculated using the Fixed Effects approach. This suggests that the models contain unobserved time-invariant factors, which vary across districts and correlate with both the treatment and the dependent variable. Controlling for them is essential to avoid bias. The Fixed Effects model controls for these unobservable factors whereas the First Differences and Pooled OLS might fail if these factors interact with time in a way that first differencing may not account for. This suggests that the data is better described by a model which absorbs omitted variable bias that is constant over the years but variable across districts. The difference-in-difference coefficient of the Fixed Effects model indicates that the Sexual Offences Act led to an average of 65.35 more reports in districts in Ireland per annum than in those in Northern Ireland after 2017, controlling for other factors and absorbing unit and time-fixed effects. The Fixed Effects model also suggests that alcohol consumption, differences in earnings between the sexes, the COVID-19 lockdown, recessions, and mental illness prevalence, are statistically significant and thus potentially predictive in reports for sexual offences.

Despite these results, it is dubitable whether a causal effect can yet be inferred. The substantial difference in the estimates between the approaches implies that some other factor is operating here, specific to districts and correlated with the effect of the Act. The significant rise in R-squared when time-invariant factors are absorbed suggests that heterogeneity between districts substantially explains variances in crime reporting. It is unlikely that the Sexual Offences Act had a differential effect on districts within regions unless something specific to districts is instrumental in harbouring the effect of the Act on reporting. An example could be unequal access to legal information from victim support services across districts. It is also quite possible that some other event, with disproportionate effects on districts in Ireland, occurred in 2017, which led to increased reports. The Fixed Effects model's statistically significant result is nonetheless promising, as it supports the notion that progressive sexual violence legislation does have a positive impact on reporting whilst controlling for unobserved, time-invariant determinants. This suggests that Northern Ireland might benefit by implementing a similar Act but there is insufficient evidence to conclude this with certainty.

Parallel trends

Analysis via regression indicated that there is no evidence to reject the parallel trends assumption between districts in Ireland and Northern Ireland.

VARIABLES	Total reports
Year2014	-85.67***
	(14.49)
Year2015	-55.95***
	(9.234)
Year2016	-31.04***
	(7.605)
RegionXYear2014	9.537
	(16.25)
RegionXYear2015	-1.012
	(11.94)
RegionXYear2016	-12.60
	(9.899)
Constant	243.4***
	(1.997)
Observations	312
Number of District	39
R-squared	0.509

Figure 4: Regression estimates in parallel trends assumption analysis

The statistical insignificance of the estimates for the three years prior to 2017 suggests that there was no significant divergence in trends for reports of sexual offences between districts in Ireland and Northern Ireland. The Wald test to see if the interaction coefficients were statistically different to zero confirmed this. Parallel trends can also be observed graphically:

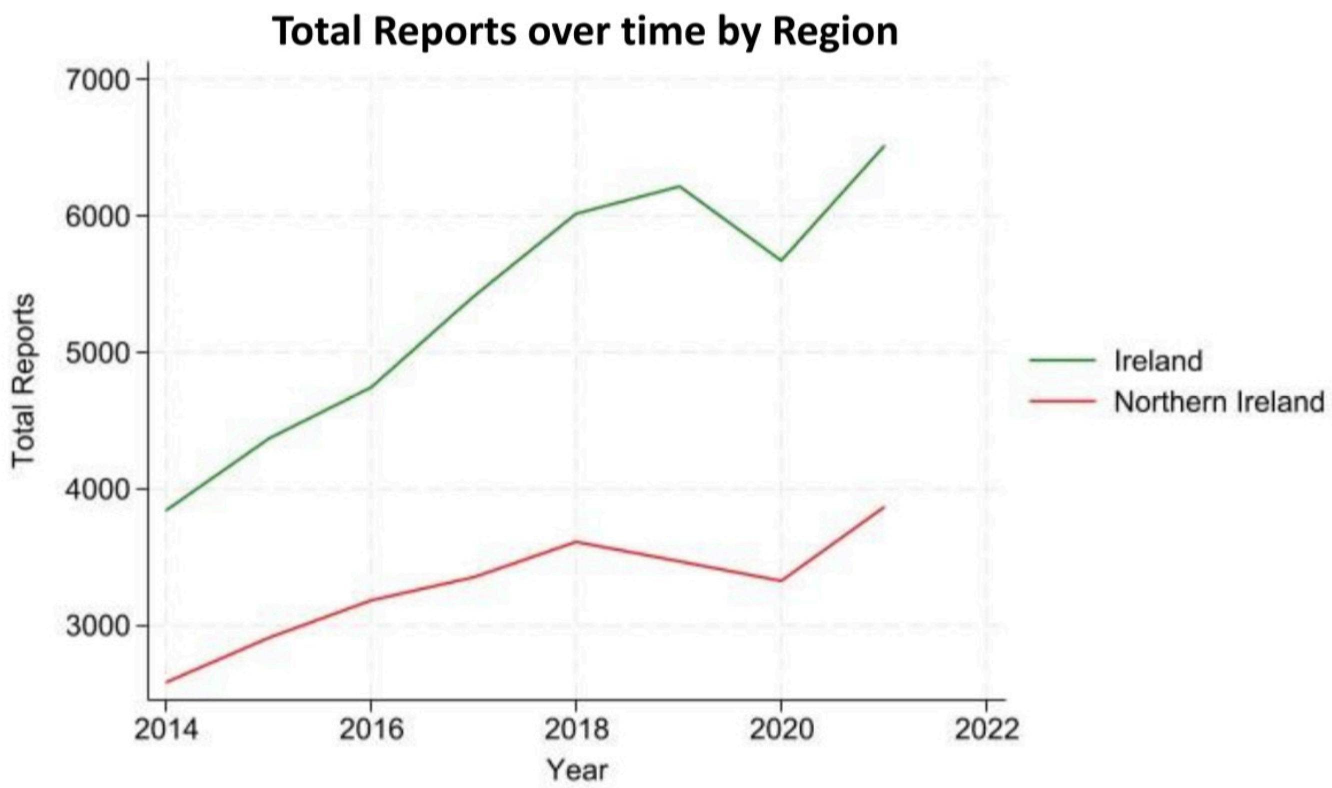

Figure 5: Trends between Ireland and Northern Ireland

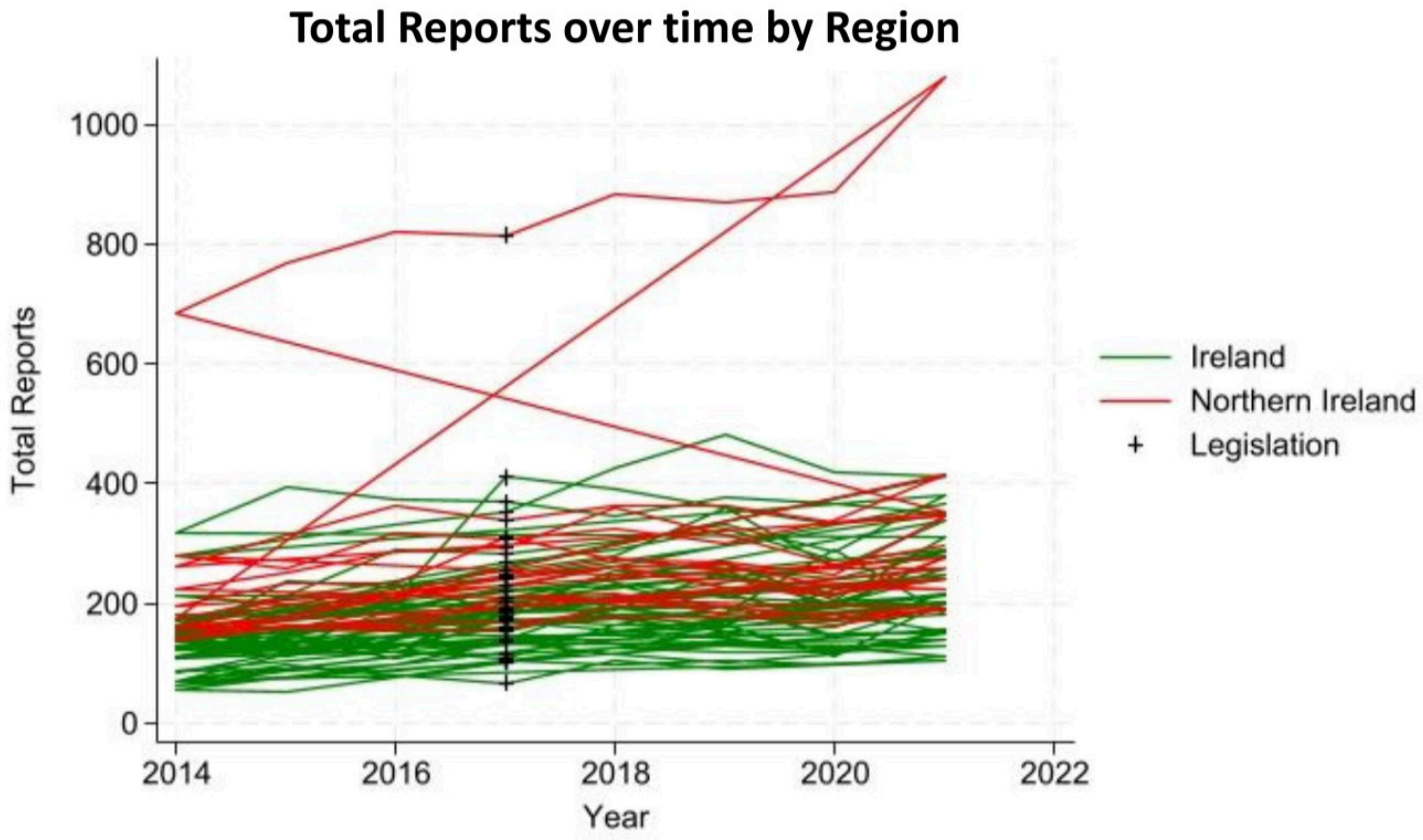

Figure 6 :Trends between districts in both regions

Figure 6 also illustrates that districts in Ireland generally had a lower level of reporting compared to Northern Ireland both before and after 2017. This could be because districts in Northern Ireland generally cover areas with higher populations on average compared to districts in Ireland. However, it can also reflect a fundamental difference between the regions such as a stronger culture of stigma preventing reporting of sexual violence in Ireland or generally elevated levels of sexual violence in the North. This offers an angle for further research.

Discussion of possible extensions

To more accurately gauge the effect of the Sexual Offence Act, variables controlling for district-specific characteristics which are time-invariant could help to eliminate the heteroskedasticity and omitted variable bias in the model. This could include variables composed of survey data on attitudes in districts towards sexual violence and its reporting, trust in law enforcement across districts, or data on the presence of rape crisis centres in districts for survivors to obtain legal information. The external validity of any findings could be strengthened by comparing the impact of the Sexual Offences Act to other regions by conducting cross-country analyses to grasp the effect of varying cultural and political differences. A fundamental weakness of this investigation is that it relied on publicly available data on reporting and data for control variables that was not at a district/case level – anonymous survey data on the level of reported incidents as a proportion of all incidents of sexual violence and incident characteristics, would more accurately measure the effect of progressive legislation on reporting.

Conclusion

The special case of the fundamentally different legal frameworks surrounding sexual violence between Ireland and Northern Ireland presents an excellent opportunity to investigate differences in reporting and attrition of sexual offences between the two regions. Whereas sexual law in Ireland places an emphasis on the protection of the complainant, the criminal justice system in Northern Ireland leaves complainants publicly exposed.

Exploiting a quasi-experimental situation, this report finds a result which suggests that the Sexual Offences Act (2017) contributed to a rise in reports of sexual violence to the police. This fits in with the notion that the nature of the criminal justice system and its perception is a primary factor in reasons for disclosure/nondisclosure of sexual violence to the police (Hanly, Healy, and Scriver, 2009). It cannot be concluded, however, that this effect is causal, as the quantitative analysis in this report's investigation is inadequate to account for time-invariant and unit-invariant factors potentially confounding results, and for other events occurring in 2017 which may be causally related to the relative rise in reports for Ireland. Thus, there is insufficient evidence to confirm the hypothesis that progressive sexual law increases reporting of sexual offences. Yet, the assumption of parallel trends holds, lending to the credence of the differences-in-differences approach for the examined period.

Further research is required to increase the strength of the report's findings and fit them into a broader narrative in the literature around reporting of sexual violence. Collection of, and wider access to, more data linked to reporting of crimes of a sexual nature at a district level would significantly improve the research's potential.

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